

# DDM-2801C/2802C/2801C2/2802C2

## SERVICE MANUAL REVISED

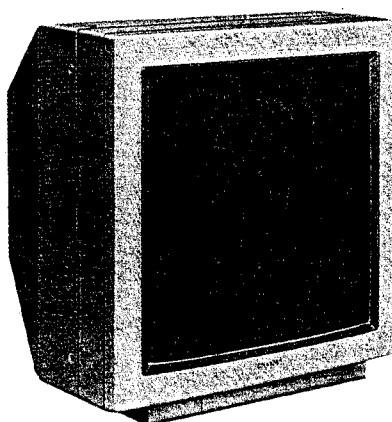


Photo DDM-2802C

*US Model  
Canadian Model  
UK Model  
AEP Model*

*DDM-2801C*

*Chassis NO. SCC-C08A-A*

*DDM-2802C*

*Chassis NO. SCC-C91A-A*

*DDM-2801C2*

*Chassis NO. SCC-C94A-A*

*DDM-2802C2*

*Chassis NO. SCC-C94B-A*

### SPECIFICATIONS

System	2,114 lines, 60 Hz non-interlaced, Raster scanning system (Horizontal display time 5.734 $\mu$ s)
Picture size	498 (w) $\times$ 498 (h) mm (19.6 $\times$ 19.6 inches)
Addressable pixels	2,048 dots (H) $\times$ 2,048 lines (V)
Video amplifier	Bandwidth: 60 Hz - 300 MHz $\pm$ 3 dB Pulse rise/fall time: 1.6 ns or less
Maximum brightness	More than 80 Nit
Geometric distortion	Within the area of a circle whose radius equals 1% of the picture height at all areas of the picture.
Picture tube	Super fine-pitch Trinitron color tube 0.31 mm phosphor trio pitch P22 phosphor 90 degree deflection 69% total optical transmission
Convergence	Zone A: $\leq$ 0.3 mm Zone B: $\leq$ 0.5 mm Zone C: $\leq$ 0.7 mm

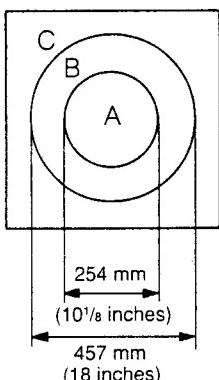
Inputs	
Video inputs R.G.B:	BNC, 50 ohms terminated 0.714 Vp-p, positive
Sync inputs HD, VD:	BNC, 75 ohms terminated TTL, negative
Power requirements	For DDM-2801C/DDM-2802C 90 - 132 V, 50/60 Hz $\pm$ 3 Hz
	For DDM-2801C2/DDM-2802C2 180 - 264 V, 50/60 Hz $\pm$ 3 Hz
Power consumption	Maximum 450 W (750 VA)

### Others

Operating temperature	0°C - 40°C (34°F - 104°F)
Operating humidity	10% - 85%
Storage temperature	-20°C to +60°C (-48°F to +140°F)
Storage humidity	10% - 95%
Dimensions and weight	

Model	Dimensions including projecting parts (w/h/d)	Weight
DDM-2801C DDM-2801C2	Approx. 694 $\times$ 673 $\times$ 760 mm (27 $\frac{3}{8}$ $\times$ 26 $\frac{1}{2}$ $\times$ 30 inches)	Approx. 98 kg (216 lb)
DDM-2802C DDM-2802C2	Approx. 690 $\times$ 729 $\times$ 776 mm (27 $\frac{1}{4}$ $\times$ 28 $\frac{3}{4}$ $\times$ 30 $\frac{1}{2}$ inches)	Approx. 108 kg (238 lb)

Design and specifications are subject to change without notice.



Trinitron Data Display Monitor  
**SONY**<sup>®</sup>

**SAFETY-RELATED COMPONENT WARNING!!**

**COMPONENTS IDENTIFIED BY SHADING AND MARK**  
**⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.**

**CAUTION!!**

**DO NOT USE THE EXTERNAL DEGAUSSER TO DEMAGNETIZE THE SCREEN.  
BE SURE TO USE THE DEGAUSS SWITCH ON THE FRONT PANEL.**

**ATTENTION AU COMPOSANT AYANT RAPPORT A LA SÉCURITÉ!!**

**LES COMPOSANTS IDENTIFIÉS PAR UN TRAMÉ ET UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES, LES VUES EXPLOSÉES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DES SUPPLÉMENTS PUBLIÉS PAR SONY. LES RÉGLAGES DU CIRCUIT QUI SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT SONT IDENTIFIÉS DANS CE MANUEL. SUIVRE LES PROCÉDURES QUAND LES COMPOSANTS CRITIQUES SONT REMPLACÉS OU LE FONCTIONNEMENT IMPROPRE EST SUSPECTÉ.**

**ATTENTION!!**

**NE PAS UTILISER DE DÉMAGNÉTISEUR EXTÉRITUR POUR DÉMAGNÉTISER L'ÉCRAN.  
UTILISER LA TOUCH DE DÉMAGNÉTISATION (DEGAUSS) SUR LE PANNEAU FRONTAL.**

## SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Check that all control knobs, shields, covers, ground straps, and mounting hardware have been replaced. Be absolutely certain that you have replaced all the insulators.
4. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
5. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
6. Check the line cord for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
7. Check the condition of the monopole antenna (if any).  
Make sure the end is not broken off, and has the plastic cap on it. Point out the danger of impalement on a broken antenna to the customer, and recommend the antenna's replacement.
8. Check the B+ and HV to see they are at the values specified. Make sure your instruments are accurate; be suspicious of your HV meter if sets always have low HV.
9. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

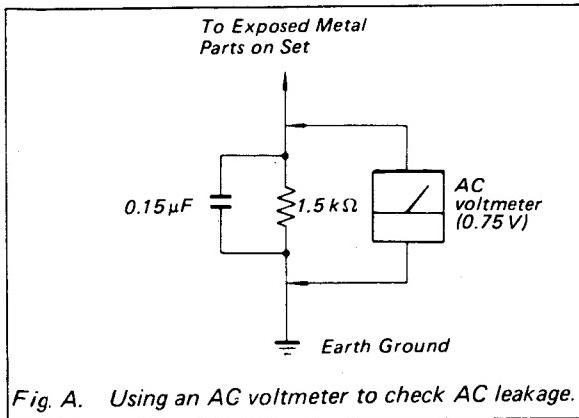


Fig. A. Using an AC voltmeter to check AC leakage.

### LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

### HOW TO FIND A GOOD EARTH GROUND

A cold-water pipe is guaranteed earth ground; the cover-plate retaining screw on most AC outlet boxes is also at earth ground. If the retaining screw is to be used as your earth-ground, verify that it is at ground by measuring the resistance between it and a cold-water pipe with an ohmmeter. The reading should be zero ohms. If a cold-water pipe is not accessible, connect a 60–100 watts trouble light (not a neon lamp) between the hot side of the receptacle and the retaining screw. Try both slots, if necessary, to locate the hot side of the line, the lamp should light at normal brilliance if the screw is at ground potential. (See Fig. B)

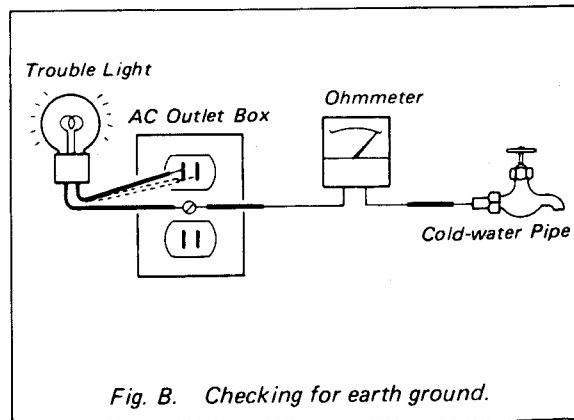


Fig. B. Checking for earth ground.

**Warning—**This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

**Important—**To insure that the complete system (including this peripheral) is capable of complying with the FCC requirements, it is recommended that the user make sure that the individual equipment of the complete system has a label with one of the following statements.

"This equipment has been tested with a Class A Computing Device and has been found to comply with Part 15 of FCC rules."

—or—

"This equipment complies with the requirements in Part 15 of FCC rules for a Class A Computing Device."

—or equivalent.

## **CONFIDENTIAL**

The material contained in this manual consists of information that is the property of Sony Corporation and is intended solely for use by the purchasers of the equipment described in this manual.

Sony Corporation expressly prohibits the duplication of any portion of this manual or the use thereof for any purpose other than the operation or maintenance of the equipment described in this manual without the express written permission of Sony Corporation.

## **CONFIDENTIEL**

Le matériel contenu dans ce manuel consiste en informations qui sont la propriété de Sony Corporation et sont destinées exclusivement à l'usage des acquéreurs de l'équipement décrit dans ce manuel.

Sony Corporation interdit formellement la copie de quelque partie que ce soit de ce manuel ou son emploi pour tout autre but que des opérations ou entretiens de l'équipement à moins d'une permission écrite de Sony Corporation.

## **VERTRAULICH**

Das in dieser Anleitung enthaltene Material besteht aus Informationen, die Eigentum der Sony Corporation sind, und ausschließlich zum Gebrauch durch den Käufer der in dieser Anleitung beschriebenen Ausrüstung bestimmt sind.

Die Sony Corporation untersagt ausdrücklich die Vervielfältigung jeglicher Teile dieser Anleitung oder den Gebrauch derselben für irgendeinen anderen Zweck als die Bedienung oder Wartung der in dieser Anleitung beschriebenen Ausrüstung ohne ausdrückliche schriftliche Erlaubnis der Sony Corporation.

Take care with the following points when servicing and verifying.

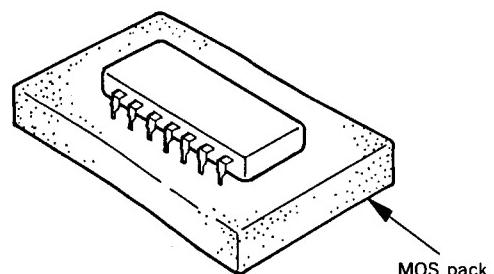
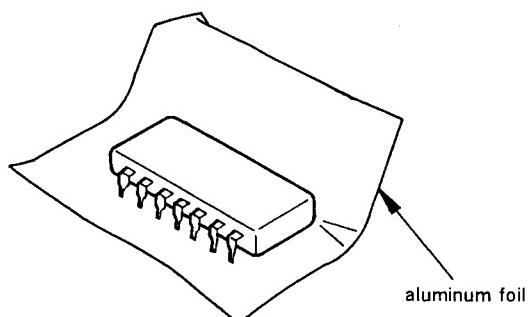
[Cautions in handling semiconductors easily affected by static electricity.]

Discharging electrostatic charge with humans or clothes may break FET of IC and 2SK type according to the structure. Take care not to touch pins directly when handling. (Particular care should be paid in dry season and in dry area.)

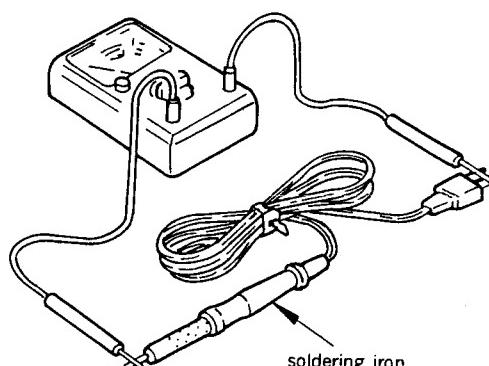
### Cautions in IC replacing

1. Put it in the MOS pack so that all terminal are the same electric potential, or store it wrapping up in aluminum foil.

(Keep this condition until attaching to the unit.)



2. Check that the tip of soldering iron is not leaked using a tester. If it is leaked, use another soldering iron.



3. To set the same electric potential, touch work clothes, working desk, unit, patte

## TABLE OF CONTENTS

<u>Section</u>	<u>Title</u>	<u>Page</u>	<u>Section</u>	<u>Title</u>	<u>Page</u>
<b>1. GENERAL</b>					
1-1.	Features .....	8	3-5-1.	CRT Neck Assembly .....	32
1-2.	Precautions.....	8	3-6.	E Board.....	34
1-3.	Location and Function of Controls .....	9	3-6-1.	Horizontal Oscillation Circuit .....	34
1-4.	External Dimensional Diagram .....	12	3-6-2.	Horizontal Drive Circuit .....	34
<b>2. DISASSEMBLY</b>					
2-1.	Removal of Cabinet (DDM-2802C/2802C2 only) ..	13	3-6-3.	Horizontal Pincushion Correction Circuit .....	35
2-2.	Removal of J Block J1, J2 and J3 Boards (DDM-2802C/2802C2 only) .....	13	3-6-4.	H. Center Adjustment Circuit .....	35
2-3.	Removal of Top Cover and Side Cover .....	14	3-6-5.	Vertical Oscillation Circuit .....	35
2-4.	Removal of J COMPLE and J1, J2 and J3 Boards (DDM-2801C/2801C2 only) .....	14	3-6-6.	Vertical Deflection output Circuit .....	36
2-5-1.	Method for checking the E and S Boards .....	15	3-6-7.	Top-Bottom Pin Correction Wave Generator : EA Board.....	36
2-5-2.	Removal of E, S COMPLE .....	15	3-7.	R Board.....	36
2-6.	Removal of M Block, M Board and M1, M2 COMPL .....	16	3-7-1.	Horizontal Convergence Correction Output Circuit .....	37
2-7.	Removal of FHL COMPLE and F, H, L Boards .....	16	3-7-2.	Description of DCT Block Operation .....	38
2-8-1.	Method for checking the A, B, C Boards .....	17	3-7-3.	Dynamic Focus Circuit .....	40
2-8-2.	Removal of ABC Block and A, B, C, U COMPL .....	17	3-7-4.	Double Quadruple Correction Circuit .....	42
2-9.	Removal of POWER COMPLE and G Board.....	18	3-8.	S Board.....	44
2-10.	Removal of T COMPL .....	18	3-8-1.	NTC Correction Circuit .....	44
2-11-1.	Method for Checking the P, R Boards .....	19	3-8-2.	Asymmetric vertical Misconvergence Compensation Circuit (S Board, AVMC Coil) .....	44
2-11-2.	Removal of P, R COMPL .....	19	3-8-3.	Vertical Direction Dynamic Misconvergence Compensation Circuit .....	45
2-12.	Removal of HVK COMPL .....	20	3-9.	B Board.....	46
2-12-1.	Fig. A : Anode Cap .....	21	3-9-1.	Functions of B Board .....	46
2-13.	Removal of Picture Tube.....	21	3-9-2.	Interface with M Block .....	46
<b>3. THEORY OF CIRCUIT</b>					
3-1.	G Board.....	22	3-9-3.	Video system Control Section .....	48
3-1-1.	Principles of Control Operation .....	22	3-9-4.	Internal Test Pattern Generator (DDM-2801C ; Serial No. up-to 2,000,043) (DDM-2801C2 ; Serial No. up-to 2,000,049) (DDM-2802C ; Serial No. up-to 2,000,020) (DDM-2802C2 ; Serial No. up-to 2,000,012) ..	50
3-1-2.	Oscillation and Synchronous circuit of Power Supply : GA Board .....	23	3-9-5.	Internal Test Pattern Generator (DDM-2801C ; Serial No. 2,000,044 and higher) (DDM-2801C2 ; Serial No. 2,000,050 and higher) (DDM-2802C ; Serial No. 2,000,021 and higher) (DDM-2802C2 ; Serial No. 2,000,013 and higher) .....	55
3-1-3.	Over Voltage Protection (OVP) Circuit .....	23	3-10.	A Board .....	57
3-1-4.	Control Circuit .....	24	3-10-1.	Outline of A Board Functions .....	57
3-1-5.	Over Voltage Detection Circuit .....	24	3-10-2.	A Board Inputs .....	57
3-1-6.	Failure Indicators of output Voltage: T Board .....	24	3-10-3.	Operation of Each Block .....	58
3-2.	F Board.....	26	3-11.	M1 Board .....	60
3-2-1.	Degauss Circuit .....	26	3-11-1.	CPU/Peripheral circuit .....	60
3-2-2.	RCC (Ringing Chock Converter) Circuit .....	26	3-11-2.	External Communication Control Block ..	61
3-3.	P and K Boards .....	27	3-11-3.	Memory Block .....	61
3-3-1.	HV Regulator circuit .....	28	3-11-4.	Address Counter Block .....	62
3-3-2.	HV Protection circuit .....	29	3-11-5.	Interpolation Waveform Generator Block ..	63
3-3-3.	Beam Current Protector.....	30	3-11-6.	Serial Data Transmission Block .....	63
3-4.	T, H, L, J1, J2 and J3 Boards.....	31	3-11-7.	A/D Converter Circuit .....	63
3-4-1.	Description of Indicators .....	31	3-11-8.	Landing Adjustment System .....	64
3-4-2.	H Board .....	31	3-11-9.	Auto white Balancee Adjustment System ..	64
3-4-3.	L Board .....	31	3-11-10.	Self-diagnosis Function .....	65
3-4-4.	J1 Board .....	31	3-12.	M2 Board .....	66
3-4-5.	J2 Board .....	31	3-12-1.	Digital Function Generator Block .....	66
3-4-6.	J3 Board .....	31	3-12-2.	Reference Signal Generator (M2A Board) .....	67
3-5.	CRT .....	32			

**DDM-2801C/2802C**  
**DDM-2801C2/2802C2**

<u>Section</u>	<u>Title</u>	<u>Page</u>
3-12-3. Digital Attenuator Block (M2B and M2C Boards) .....	68	
<b>4. ADJUSTMENT</b>		
4-1. Circuit Board Location .....	69	
4-2. Equipment Set-up Procedure .....	70	
4-2-1. Connections Diagram .....	70	
4-2-2. Adjustment Method Using a Remote Controller .....	71	
4-3. Installation Adjustment .....	75	
4-4. Adjustment after Replacing the CRT .....	75	
4-5. Adjustment after Replacing a block .....	76	
4-6. Adjustment .....	77	
4-6-1. Landing Adjustment .....	77	
4-6-2. Convergence Adjustment .....	78	
4-6-3. Focus Adjustment .....	81	
4-6-4. Video Adjustment .....	82	
4-6-5. Picture Distortion Adjustment .....	84	
4-6-6. H. STAT VR Adjustment .....	87	
4-7. Safety Related Adjustment .....	88	
4-8. Electricity Adjustment .....	94	
4-8-1. A Board Adjustment .....	94	
4-8-2. B Board Adjustment .....	95	
4-8-3. E Board Adjustment (1) .....	96	
4-8-4. E Board Adjustment (2) .....	97	
4-8-5. M1 Board Adjustment .....	98	
4-8-6. R Board Adjustment .....	99	
4-8-7. S Board Adjustment .....	100	

<b>5. DIAGRAM</b>		
5-1. Block Diagram .....	101	
5-2. Frame Schematic Diagram (DDM-2801; Serial No. up-to 10,020) .....	106	
Frame Schematic Diagram (DDM-2801C; Serial No. 10,021 and higher) (DDM-2802C/2801C2/2802C2; Serial No. 10,001 and higher) .....	111	
5-3. Printed Wiring Board and Schematic Diagram		
• A, AA and AB Boards (DDM-2801C; Serial No. 2,000,014 and higher) (DDM-2802C; Serial No. 2,000,001 and higher) (DDM-2801C2; Serial No. 2,000,004 and higher) (DDM-2802C2; Serial No. 2,000,002 and higher) .....	113	
• C Board (DDM-2801C; Serial No. 2,000,019 and higher) (DDM-2802C; Serial No. 2,000,001 and higher) (DDM-2801C2; Serial No. 2,000,004 and higher) (DDM-2802C2; Serial No. 2,000,002 and higher) .....	116	
• A, AA and AB Boards (DDM-2801C; Serial No. up-to 2,000,013) (DDM-2802C; Serial No. 10,001—10,003)	120	
• C Board (DDM-2801C; Serial No. up-to 2,000,018) (DDM-2802C; Serial No. 10,001—10,003) .....	122	
• B and U Boards (DDM-2801C; Serial No. up-to 2,000,018) (DDM-2802C; Serial No. 10,001-10,003) .....	130	

<u>Section</u>	<u>Title</u>	<u>Page</u>
• B and U Boards (DDM-2801C; Serial No. 2,000,019—2,000,043) (DDM-2802C; Serial No. 2,000,001—2,000,020) (DDM-2801C2; Serial No. 2,000,004—2,000,049) (DDM-2802C2; Serial No. 2,000,002—2,000,012) ..	138	
• B and U Boards (DDM-2801C; Serial No. 2,000,044 and higher) (DDM-2802C; Serial No. 2,000,021 and higher) (DDM-2801C2; Serial No. 2,000,050 and higher) (DDM-2802C2; Serial No. 2,000,013 and higher) ..	146	
• E Board (DDM-2801C; Serial No. 10,021 and higher) (DDM-2802C/2801C2/2802C2; Serial No. 10,001 and higher)		
• EA Board (DDM-2801C; Serial No. 2,000,019 and higher) (DDM-2802C; Serial No. 2,000,001 and higher) (DDM-2801C2; Serial No. 2,000,004 and higher) (DDM-2802C2; Serial No. 2,000,002 and higher) ..	156	
• E Board (DDM-2801C only ; Serial No. up-to 10,021)		
• EA Board (DDM-2801C only ; Serial No. up-to 10,090) ..	165	
• F Board (DDM-2801C; Serial No. up-to 2,000,013) (DDM-2802C; Serial No. 10,001—10,003) (DDM-2801C2; Serial No. up-to 2,000,003) (DDM-2802C2; Serial No. up-to 2,000,001)		
• J1 and J2 Boards (DDM-2801C only ; Serial No. up-to 10,030)		
• J3 Board (DDM-2801C only ; Serial No. up-to 2,000,018)		
• L Board (DDM-2801C only ; Serial No. up-to 2,000,018)		
• T Board (DDM-2801C; Serial No. up-to 2,000,018) (DDM-2802C; Serial No. 10,001—10,003) .....	172	
• F Board (DDM-2801C; Serial No. 2,000,014 and higher) (DDM-2802C; Serial No. 2,000,001 and higher) (DDM-2801C2; Serial No. 2,000,004 and higher) (DDM-2802C2; Serial No. 2,000,002 and higher)		
• J1 and J2 Boards (DDM-2801C; Serial No. 10,031 and higher) (DDM-2802C/2801C2/2802C2; Serial No. 10,001 and higher)		
• J3 Board (DDM-2801C; Serial No. 2,000,019 and higher) (DDM-2802C; Serial No. 2,000,001 and higher) (DDM-2801C2; Serial No. 2,000,004 and higher) (DDM-2802C2; Serial No. 2,000,002 and higher)		
• L Board (DDM-2801C; Serial No. 2,000,019 and higher) (DDM-2802C; Serial No. 2,000,011 and higher) (DDM-2801C2; Serial No. 2,000,024 and higher) (DDM-2802C2; Serial No. 2,000,006 and higher)		

<u>Section</u>	<u>Title</u>	<u>Page</u>	<u>Section</u>	<u>Title</u>	<u>Page</u>
• T Board	(DDM-2801C ; Serial No. 2,000,019 and higher) (DDM-2802C ; Serial No. 2,000,001 and higher) (DDM-2801C2 ; Serial No. 2,000,004 and higher) (DDM-2802C2 ; Serial No. 2,000,002 and higher) .....	179	• R Board	(DDM-2801C ; Serial No. up-to 2,000,043) (DDM-2802C ; Serial No. up-to 2,000,020) (DDM-2801C2 ; Serial No. up-to 2,000,049) (DDM-2802C2 ; Serial No. up-to 2,000,012) .....	224
• G Board	(DDM-2801C ; Serial No. 2,000,006 and higher) (DDM-2802C ; Serial No. 2,000,001 and higher) (DDM-2801C2 ; Serial No. 2,000,004 and higher) (DDM-2802C2 ; Serial No. 2,000,002 and higher)		• R Board	(DDM-2801C ; Serial No. 2,000,044 and higher) (DDM-2802C ; Serial No. 2,000,021 and higher) (DDM-2801C2 ; Serial No. 2,000,050 and higher) (DDM-2802C2 ; Serial No. 2,000,013 and higher) .....	230
• GA and GB Board	(DDM-2801C/2802C/2801C 2/2802C2 ; Serial No. 10,001 and higher)		• M2 Board	(DDM-2801C ; Serial No. 2,000,006 and higher) (DDM-2802C ; Serial No. 2,000,001 and higher) (DDM-2801C2 ; Serial No. 2,000,004 and higher) (DDM-2802C2 ; Serial No. 2,000,002 and higher)	
• GC Board	(DDM-2801C ; Serial No. 2,000,006 and higher) (DDM-2802C ; Serial No. 2,000,001 and higher) (DDM-2801C2 ; Serial No. 2,000,004 and higher) (DDM-2802C2 ; Serial No. 2,000,002 and higher) .....	187	• M2B and M2C Board	(DDM-2801C/2802C/2801C 2/2802C2 ; Serial No. 10,001 and higher) .....	244
• G Board	(DDM-2801C ; Serial No. 2,000,005 and higher) (DDM-2802C ; Serial No. 10,001—10,003) (DDM-2801C2 ; Serial No. up-to 2,000,003) (DDM-2802C2 ; Serial No. up-to 2,000,001)		• M 2 and M2A Board	(DDM-2801C ; Serial No. up-to 2,000,005) (DDM-2802C ; Serial No. 10,001—10,003) (DDM-2801C2 ; Serial No. up-to 2,000,003) (DDM-2802C2 ; Serial No. up-to 2,000,001)	
• GA and GB Boards	(DDM-2801C/2802C/2801C 2/2802C2 ; Serial No. 10,001 and higher)		• M2B and M2C Board	(DDM-2801C/2802C/2801C 2/2802C2 ; Serial No. 10,001 and higher) .....	252
• GC Board	(DDM-2801C ; Serial No. up-to 2,000,005) (DDM-2802C ; Serial No. 1,00—10,003) (DDM-2801C2 ; Serial No. up-to 2,000,004) (DDM-2802C2 ; Serial No. up-to 2,000,001) .....	194	• M1-Board	(DDM-2801C ; Serial No. up-to 2,000,005) (DDM-2802C ; Serial No. 10,001—10,003) (DDM-2801C2 ; Serial No. up-to 2,000,003) (DDM-2802C2 ; Serial No. up-to 2,000,001) .....	262
• P Board	(DDM-2801C ; Serial No. 10,021 and higher) (DDM-2802C/2801C 2/2802C2 ; Serial No. 10,001 and higher)		• M1 Board	(DDM-2801C ; Serial No. 2,000,006 and higher) (DDM-2802C ; Serial No. 2,000,001 and higher) (DDM-2801C2 ; Serial No. 2,000,004 and higher) (DDM-2802C2 ; Serial No. 2,000,002 and higher) .....	280
• K Board	(DDM-2801C ; Serial No. 10,091 and higher) (DDM-2802C ; Serial No. 10,001 and higher) (DDM-2801C2 ; Serial No. 2,000,001 and higher) (DDM-2802C2 ; Serial No. 2,000,001 and higher) .....	200	• M Board	(DDM-2801C ; Serial No. 2,000,006 and higher) (DDM-2802C ; Serial No. 2,000,001 and higher) (DDM-2801C2 ; Serial No. 2,000,004 and higher) (DDM-2802C2 ; Serial No. 2,000,002 and higher) .....	280
• P Board	(DDM-2801C only ; Serial No. up-to 10,020)		• M Board	(DDM-2801C ; Serial No. up-to 2,000,005) (DDM-2802C ; Serial No. 10,001—10,003) (DDM-2801C2 ; Serial No. up-to 2,000,003) (DDM-2802C2 ; Serial No. up-to 2,000,001) .....	282
• K Board	(DDM-2801C only ; Serial No. up-to 10,090) .....	206	5-4. Semiconductors .....	285	
• S Board	(DDM-2801C ; Serial No. 10,091 and higher) (DDM-2802C ; Serial No. 10,001 and higher) (DDM-2801C2/2802C2 ; Serial No. 2,000,001 and higher)		6. TROUBLE SHOOTING		
• H Board	(DDM-2801C ; Serial No. 10,031 and higher) (DDM-2802C/2801C2/2802C2 ; Serial No. 10,001 and higher) .....	212	6-1. Utilizing the failure Indicators .....	302	
• S Board	(DDM-2801C only ; Serial No. up-to 10,090)		6-2. By Phenomenon .....	304	
• H Board	(DDM-2801C only ; Serial No. 10,030) .....	218	7. EXPLODED VIEWS		
			7-1. HVK Block and ABC Block .....	311	
			7-2. POWER Supply Block and FHL Block .....	312	
			7-3. PICTURE TUBE .....	313	
			8. ELECTRICAL PARTS LIST .....	314	

## **SECTION 1 GENERAL**

### **1-1. FEATURES**

The DDM-2801 series is a super-high-resolution graphic display monitor which employs a raster scanning method.

#### **Super high density graphic display**

The extremely high resolution of 2,048 dots (horizontal) x 2,048 lines (vertical) per frame has been made possible through the development of a 300 MHz band width video amplifier.

#### **20-inch by 20-inch useful screen size**

The 32-inch Trinitron picture tube with an aspect ratio 1 : 1 presents a square picture.

#### **Multi-layer optical coating**

This minimizes reflections of ambient light.

### **1-2. PRECAUTIONS**

This unit cannot be operated as a normal TV receiver/monitor.

#### **Power requirement of each model**

Operate the unit on the correct power supply as indicated below.

DDM-2801C, DDM-2802C	90~132 V
DDM-2801C2, DDM-2802C2,	180~264 V

#### **Safety**

- Should any liquid or solid object fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.
- Unplug the unit from the wall outlet if it is not to be used for a long period of time.

#### **Installation**

- Allow adequate air circulation to prevent internal heat build-up. Do not place the unit on surfaces (rugs, blankets, etc.) or near materials (curtains) which might block the ventilation holes.
- Do not install the unit in a location near heat sources such as radiators or air ducts, or in a place subject to direct sunlight, excessive dust, moisture, mechanical vibration, or shock.

#### **Transportation**

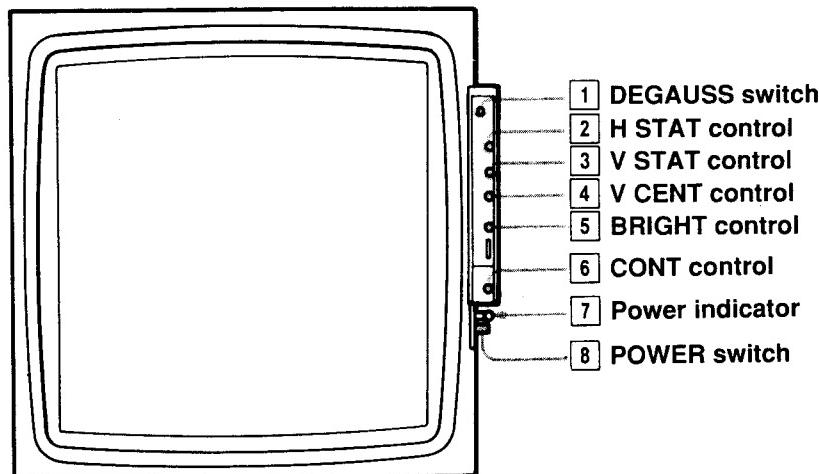
- Do not throw away the carton and packing materials. They make an ideal container in which to transport the unit.  
When shipping the unit to another location, repack it as illustrated on the carton.
- When carrying, handle it with care so as not to expose the unit to mechanical shock, especially to the picture tube.

If you have any questions or problems about this unit, consult your authorized Sony dealer.

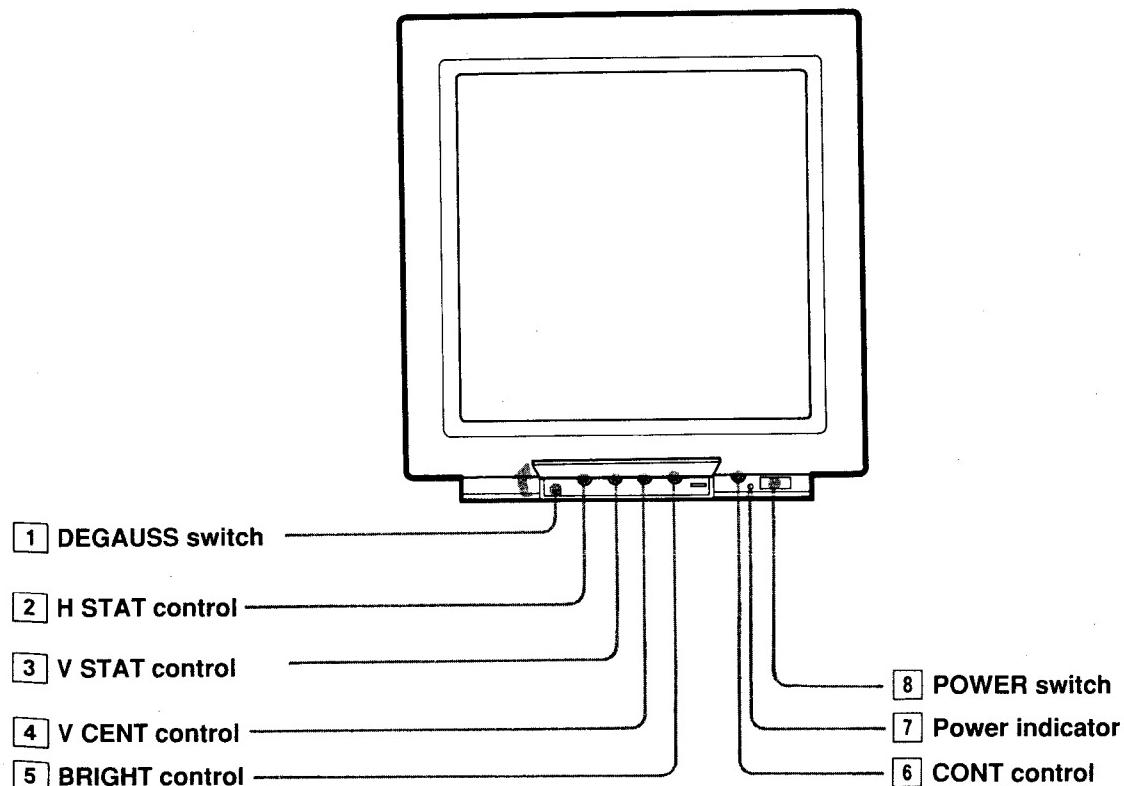
**1-3. LOCATION AND FUNCTION OF CONTROLS**

**Front panel**

**DDM-2801C,2801C2**



**DDM-2802C,2802C2**

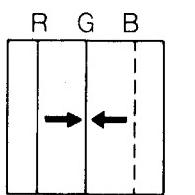


**[1] DEGAUSS switch**

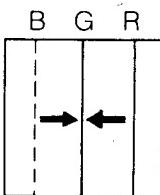
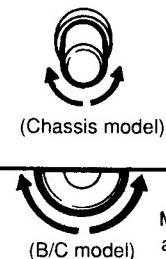
Demagnetizes the screen. Momentarily press this switch with the power turned on. Wait for 5 minutes or more before activating the switch again.

**[2] H STAT (horizontal static convergence) control**

Adjusts the convergence at the center of the screen, so that the vertical red and blue lines converge with the green line.



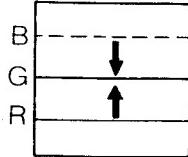
Move red line to the right,  
and blue line to the left



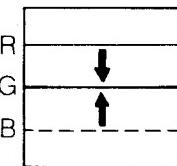
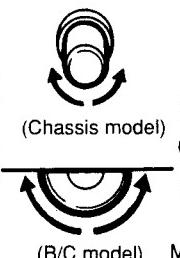
Move red line to the left,  
and blue line to the right

**[3] V STAT (vertical static convergence) control**

Adjusts the convergence at the center of the screen, so that the horizontal red and blue lines converge with the green line.



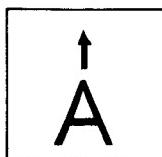
Move red line upward,  
and blue line downward



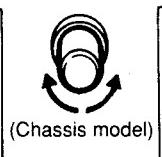
Move red line downward,  
and blue line upward

**[4] V CENT (vertical centering) control**

Adjusts the vertical position of the picture.



Move the picture  
upward



Move the picture  
downward

**[5] BRIGHT (brightness) control**

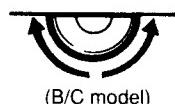
Adjusts the picture brightness. Normally set the control at the center detent position.



For a brighter picture

(Chassis model)

For a darker picture



(B/C model)

**[6] CONT (contrast) control**

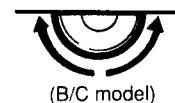
Adjusts the picture contrast.



For more contrast

(Chassis model)

For less contrast



(B/C model)

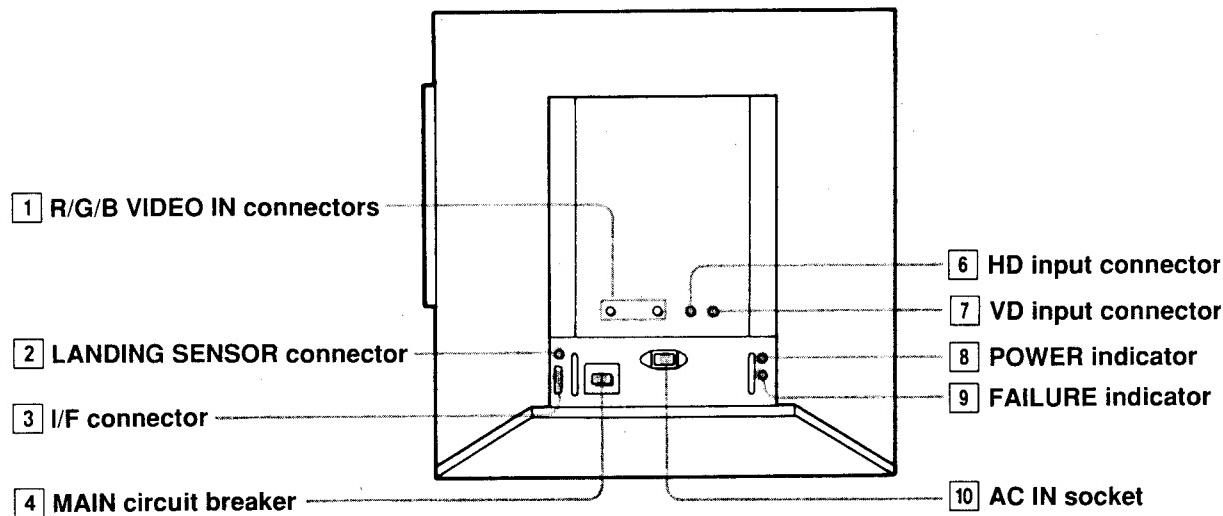
**[7] Power lamp**

Lights when the POWER switch is turned on.

**[8] POWER switch**

When the MAIN circuit breaker on the rear panel is on, depress the POWER switch to turn on the display. At this time, automatic degaussing will be activated causing the picture to shake for about 5 seconds. To turn off the display, press the POWER switch again.

## Rear panel



**[1] R/G/B VIDEO IN (input) connectors (BNC type)**  
Inputs the R (red), G (green) and B (blue) signals. The connectors are terminated at 50 ohms.

**[2] LANDING SENSOR connector (8 pin)\***  
This connector is used when adjusting uneven color by connecting the landing sensor.

**[3] I/F (interface) connector (D-sub 15 pin)\***  
This connector is used when externally adjusting distortion, convergence, color temperature, etc. by connecting the controller.

\* Adjustments [2] and [3] are performed by a service engineer.  
Should the adjustment be required, please consult a Sony representative.

**[4] MAIN circuit breaker**  
Set this circuit breaker to the I (on) position when using this unit.



**[6] HD (horizontal drive) input connector (BNC type)**

Inputs horizontal drive pulses (HD). The connector is terminated at 75 ohms.

**[7] VD (vertical drive) input connector (BNC type)**  
Inputs vertical drive pulses (VD). The connector is terminated at 75 ohms.

**[8] POWER lamp (green)**  
Lights when the POWER switch on the front panel is turned on.

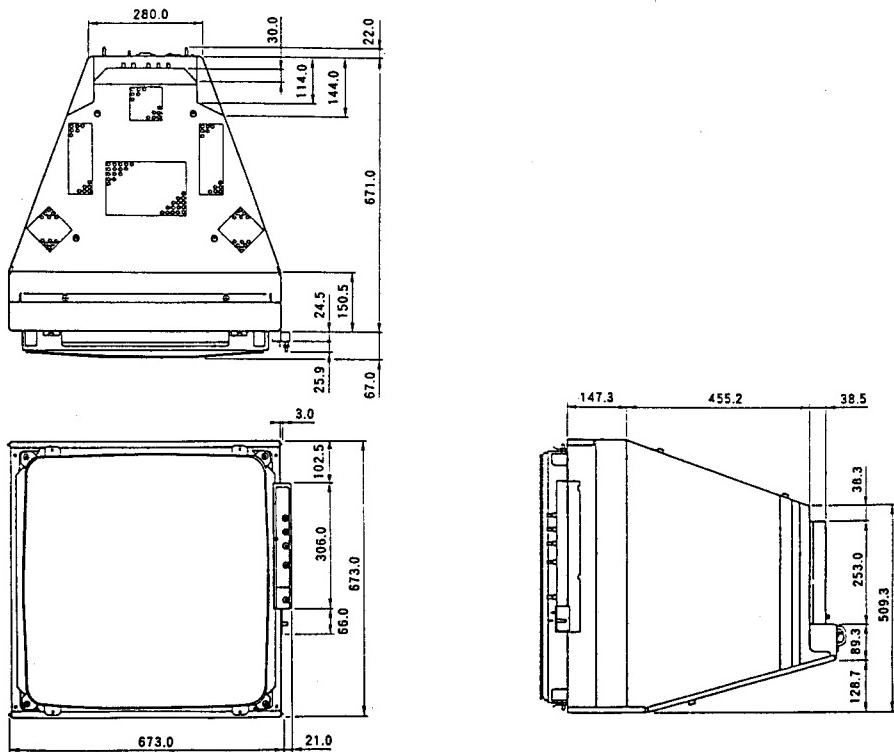
**[9] FAILURE lamp (red)**  
Lights when the circuits inside the unit are not functioning correctly. Should this lamp light, turn off the MAIN circuit breaker and consult a Sony representative.

**[10] AC IN (input) socket**  
Connect an AC power cord here.

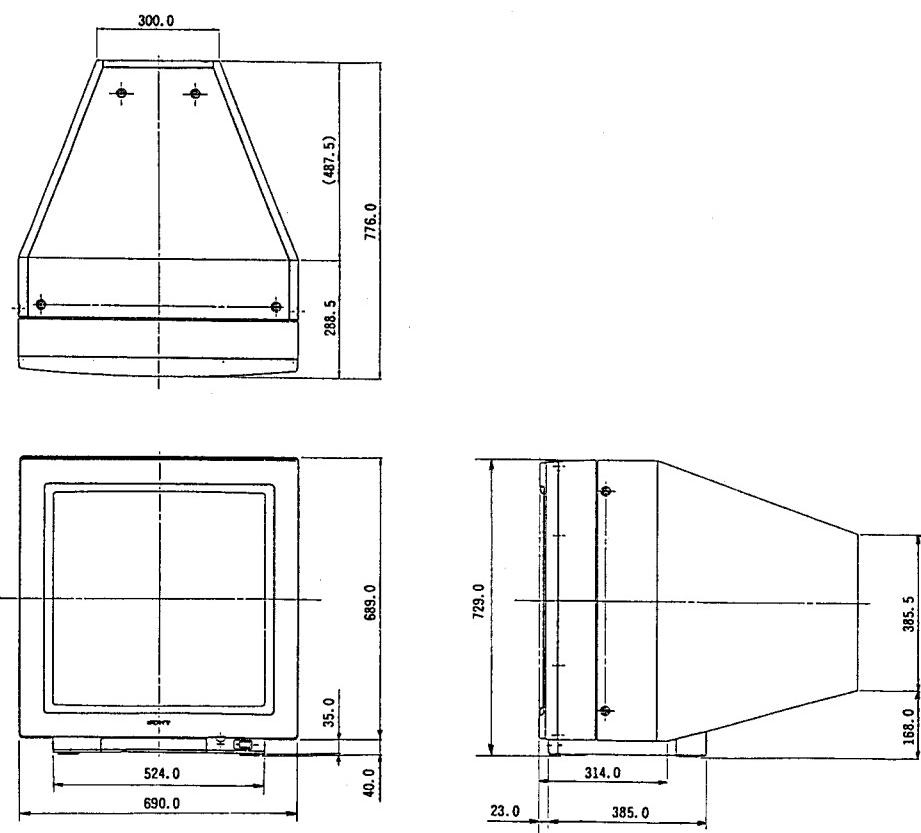
**DDM-2801C/2802C  
DDM-2801C2/2802C2**

**1-4. EXTERNAL DIMENSIONAL DIAGRAM**

● **DDM-2801C/2801C2**

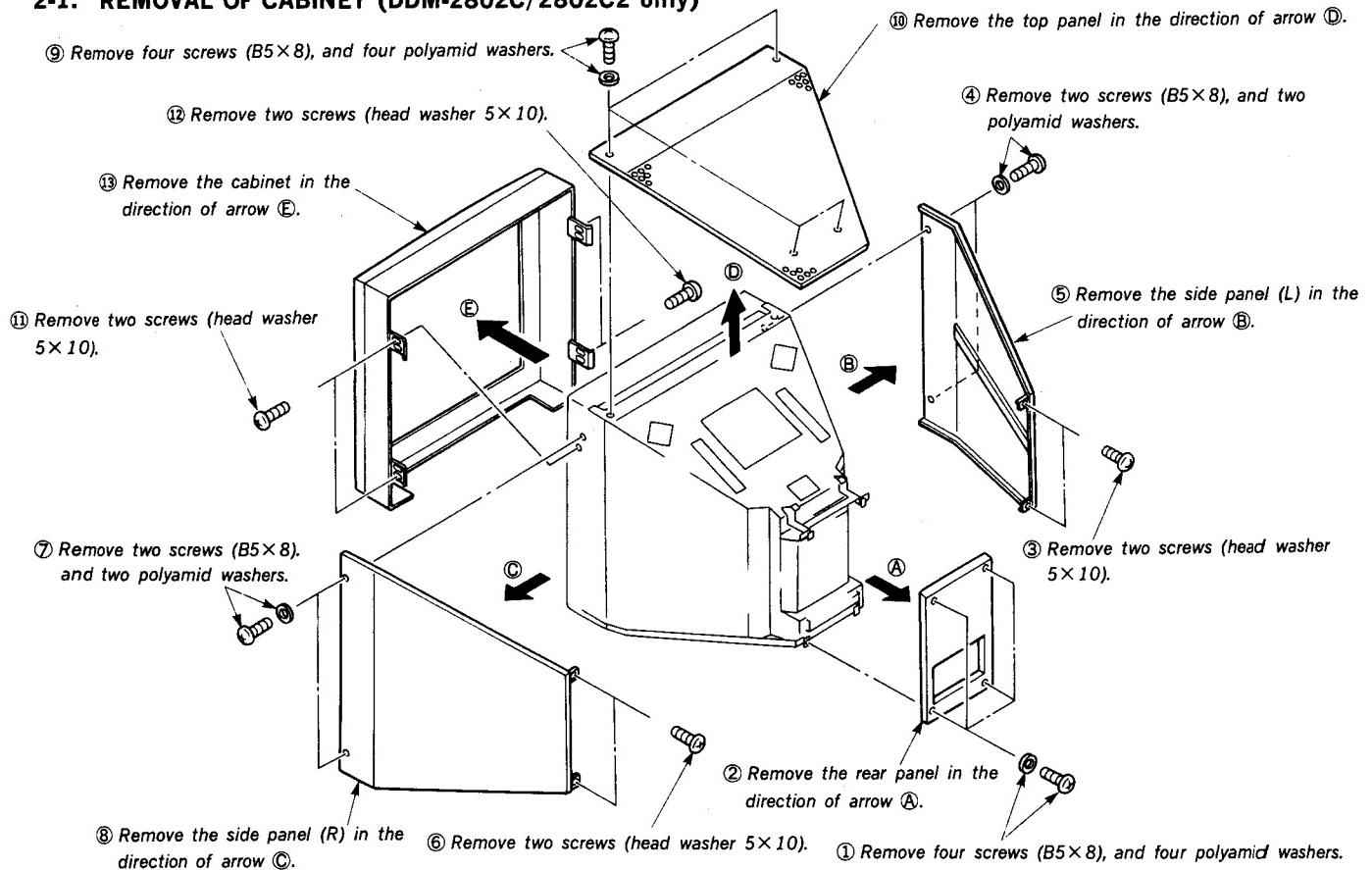


● **DDM-2802C/2802C2**

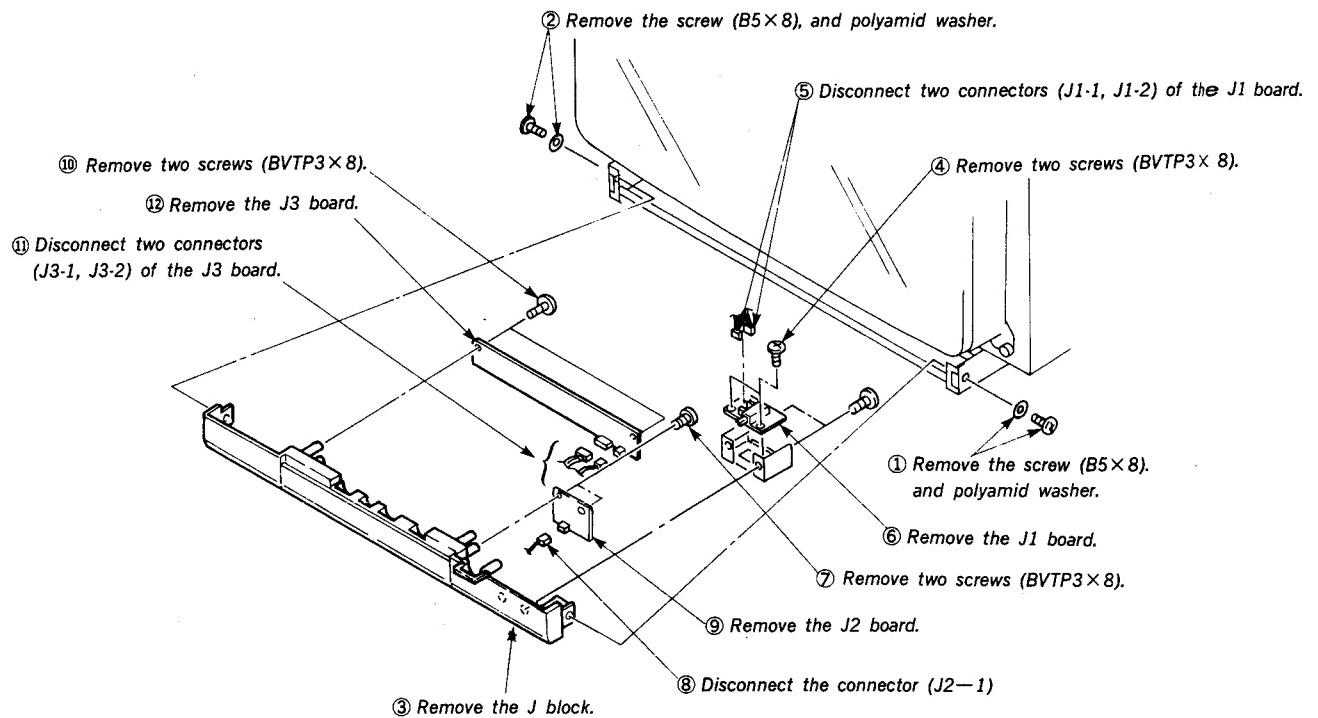


## SECTION 2 DISASSEMBLY

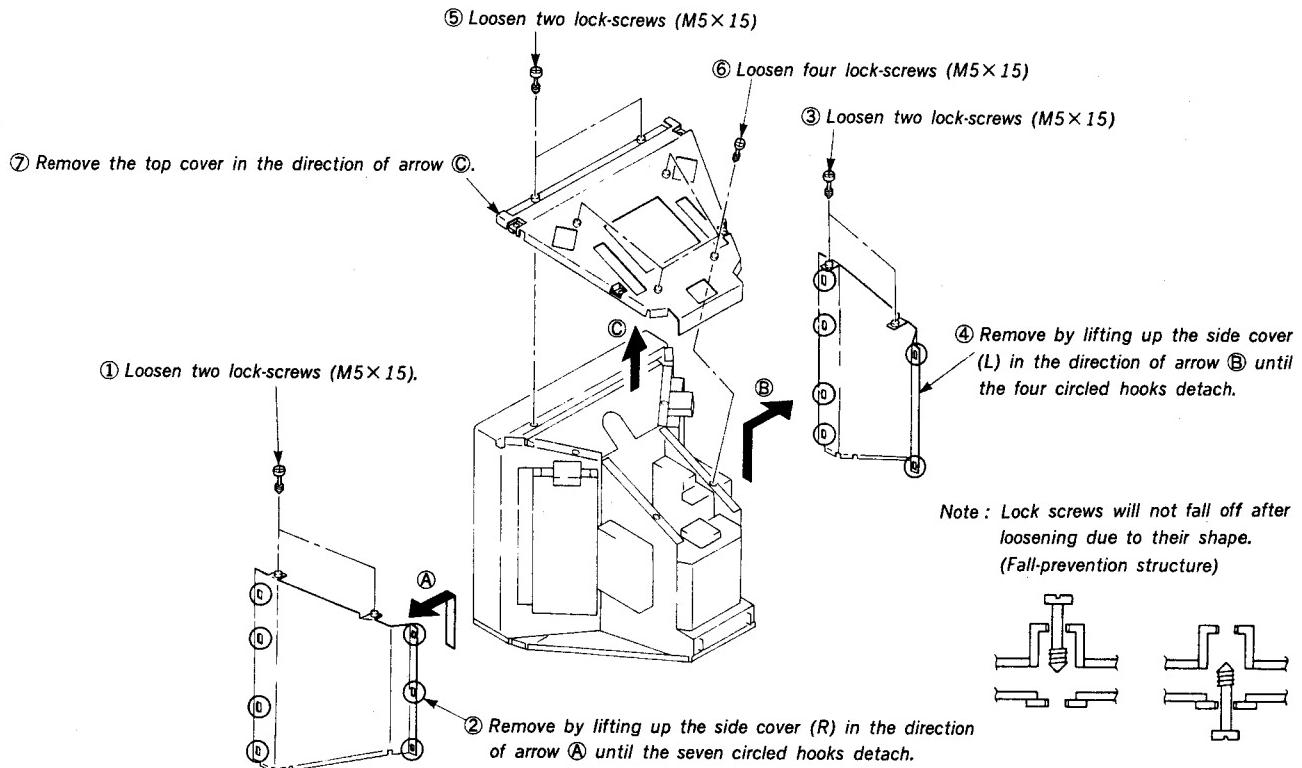
### 2-1. REMOVAL OF CABINET (DDM-2802C/2802C2 only)



### 2-2. REMOVAL OF J BLOCK AND J1, J2 AND J3 BOARD (DDM-2802C/2802C2 only)



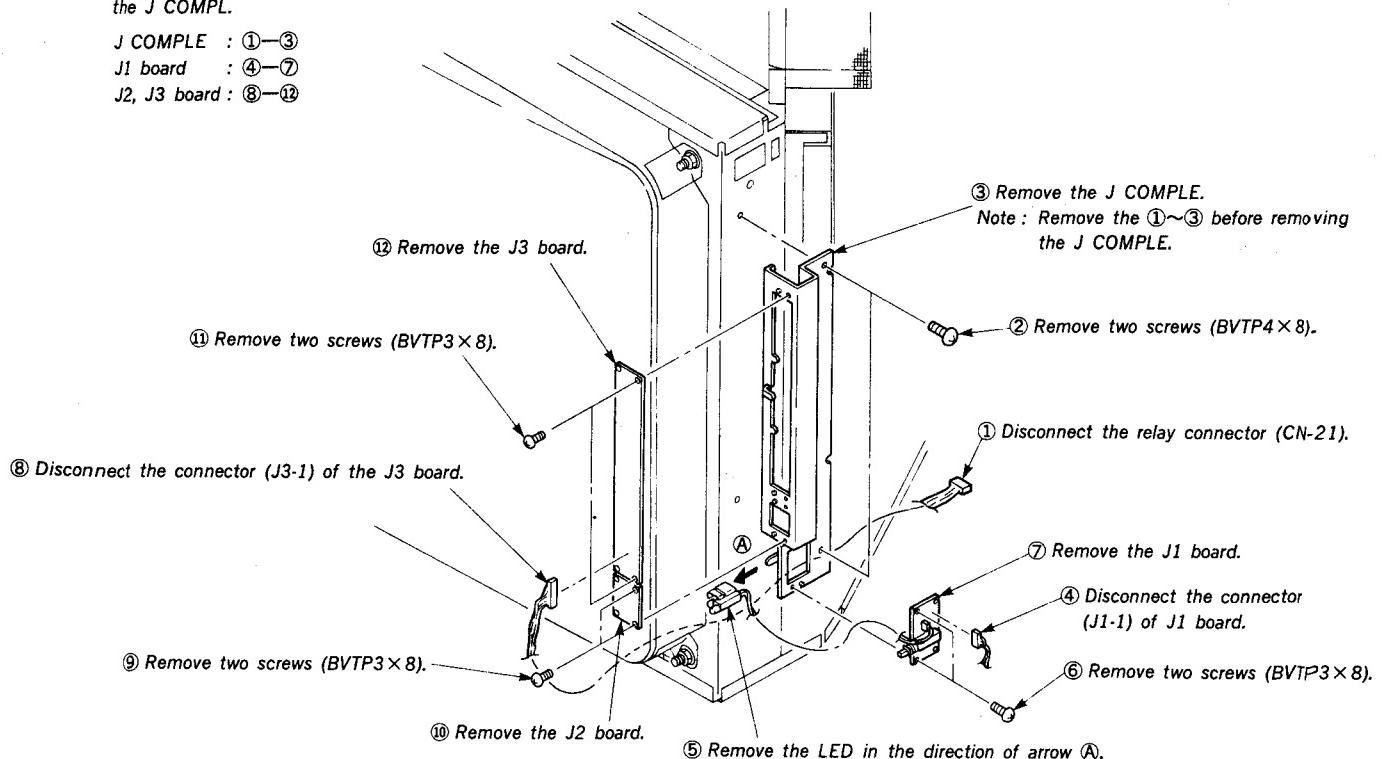
### 2-3. REMOVAL OF TOP AND SIDE COVER



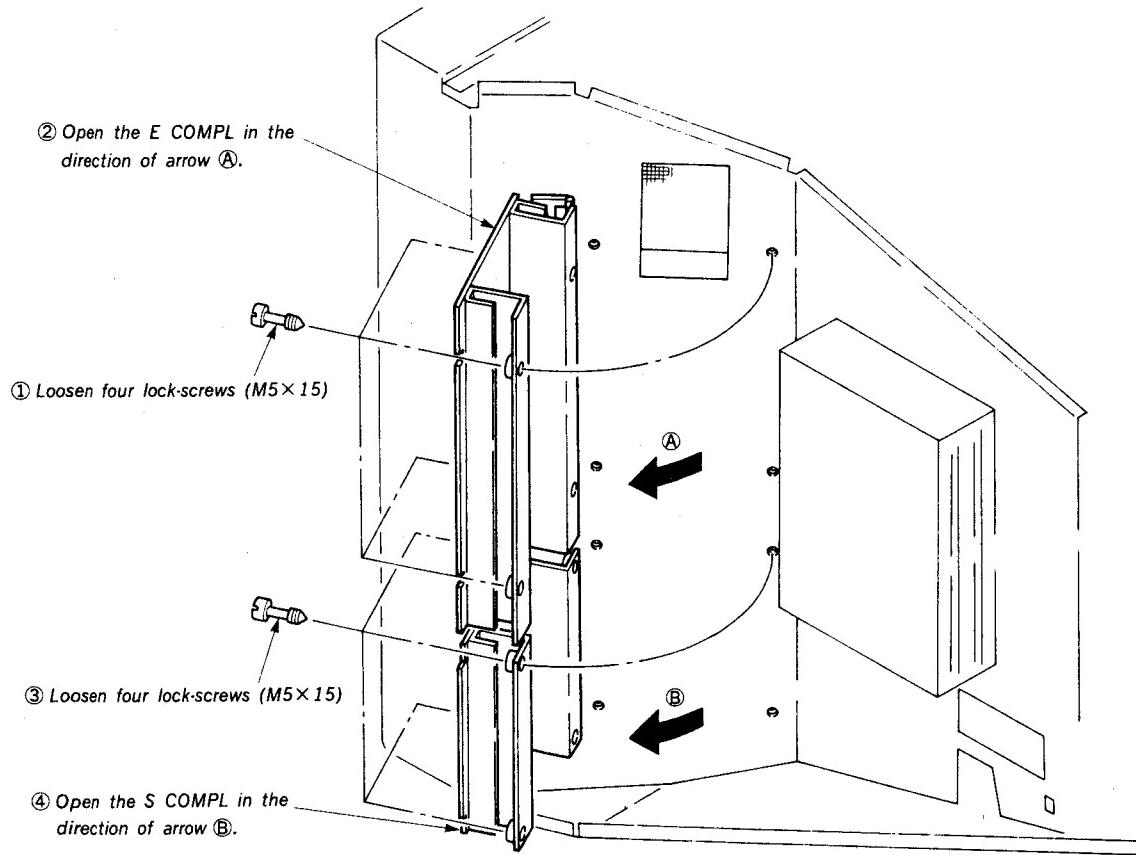
### 2-4. REMOVAL OF J COMPLE AND J1, J2, AND J3 BOARDS (DDM-2801C/2801C2 only)

Note : Remove the side cover (R) before removing the J COMPL.

J COMPLE : ①-③  
J1 board : ④-⑦  
J2, J3 board : ⑧-⑫

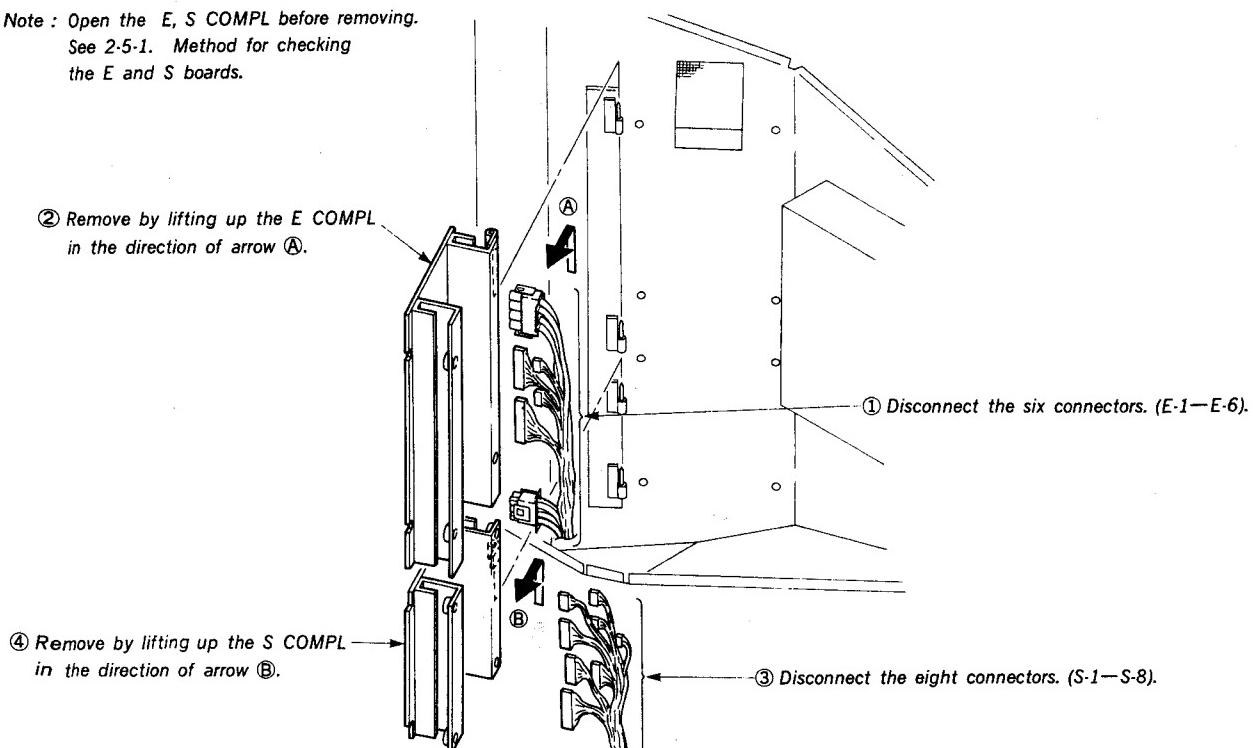


### 2-5-1. METHOD FOR CHECKING THE E AND S BOARDS

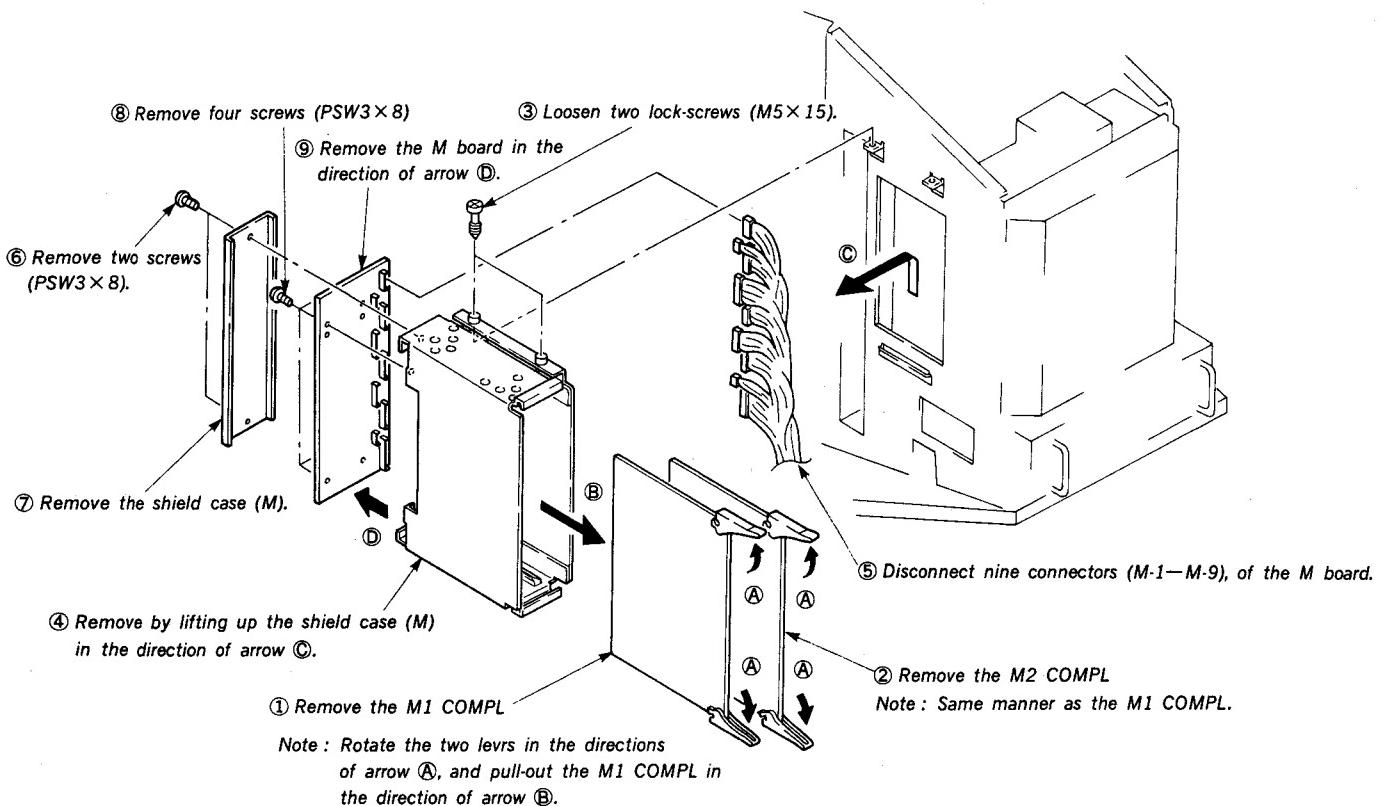


### 2-5-2. REMOVAL OF E, S COMPLE

Note : Open the E, S COMPL before removing.  
See 2-5-1. Method for checking  
the E and S boards.

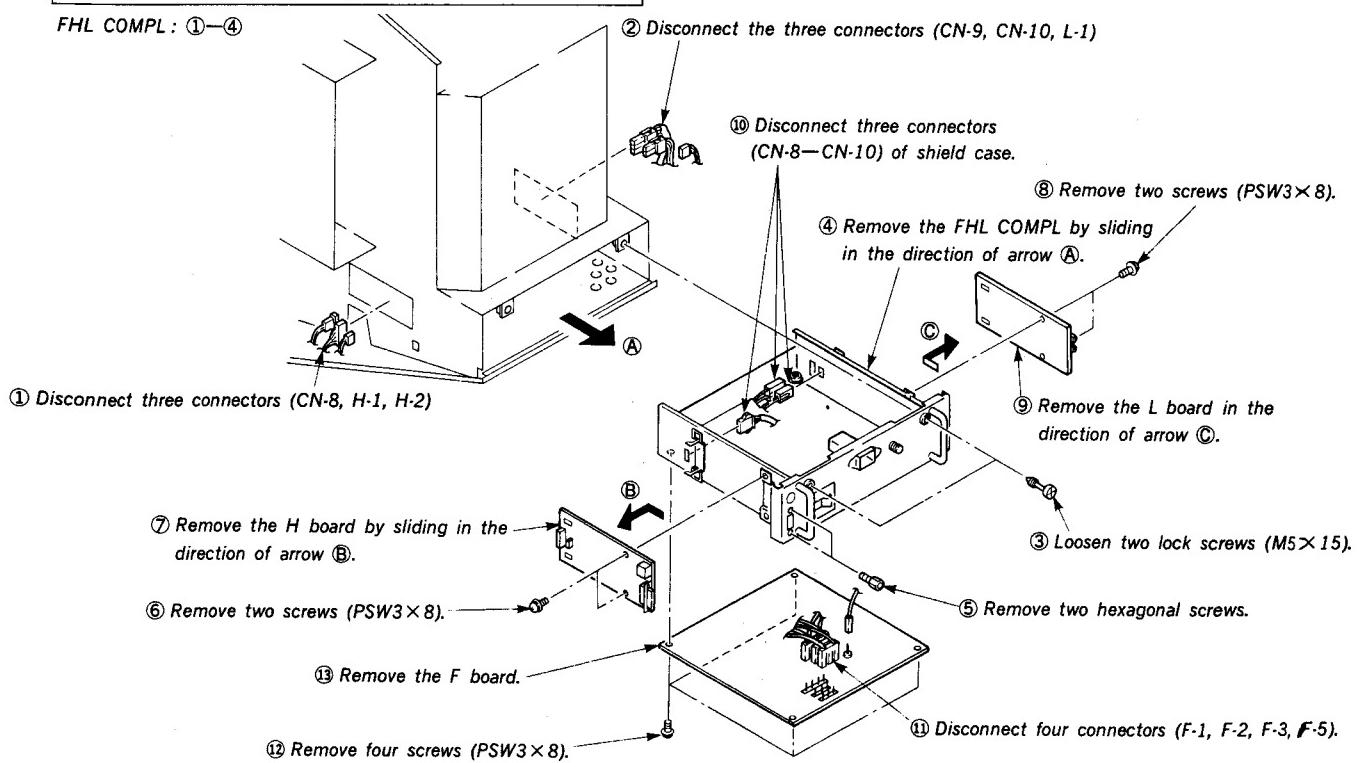


## 2-6. REMOVAL OF M BLOCK, M BOARD AND M1, M2 COMPL

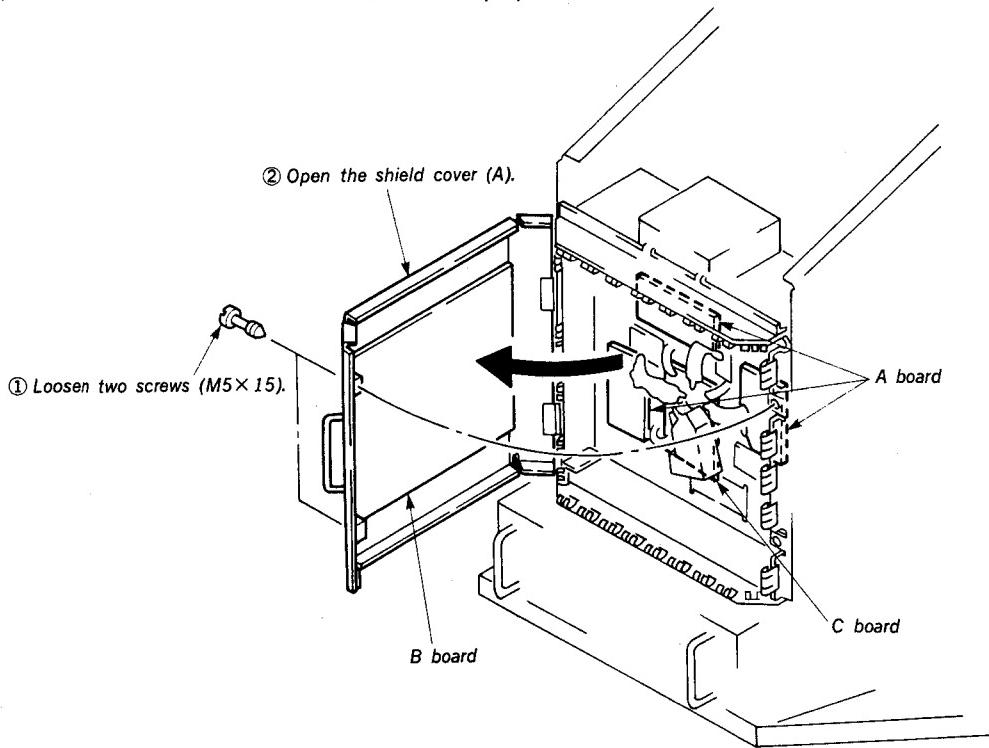


## 2-7. REMOVAL OF FHL COMPL AND F.H.L BOARDS

Note : Removal of the F board poses an electric shock hazard.  
Be sure to turn the power switch off and wait for at least one minute before starting work.



## 2-8-1. METHOD FOR CHECKING THE A, B, C BOARDS



## 2-8-2. REMOVAL OF ABC BLOCK AND A, B, C, U COMPL

Note : Open the shield cover (A) before removing.

(See 2-8-1. Method for checking the A, B, C Boards)

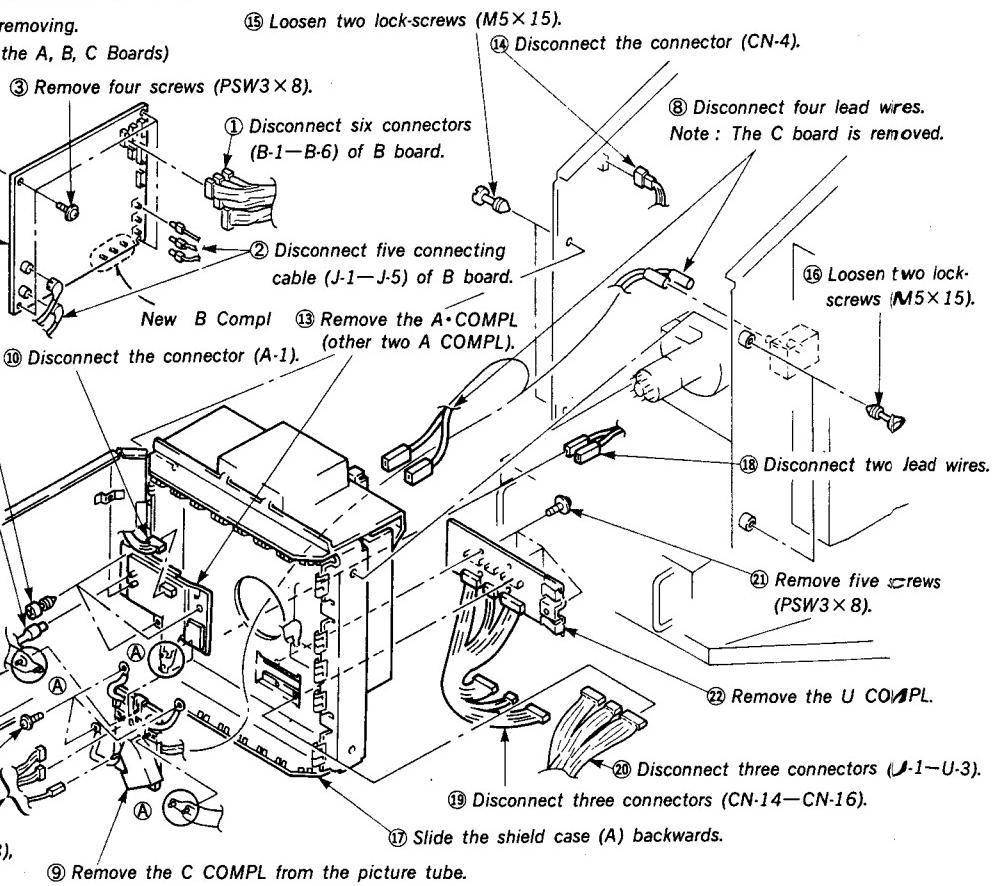
ABC block : ⑤, ⑧, ⑨, ⑭—⑯

A COMPL : ⑤, ⑩—⑬

B COMPL : ①—④

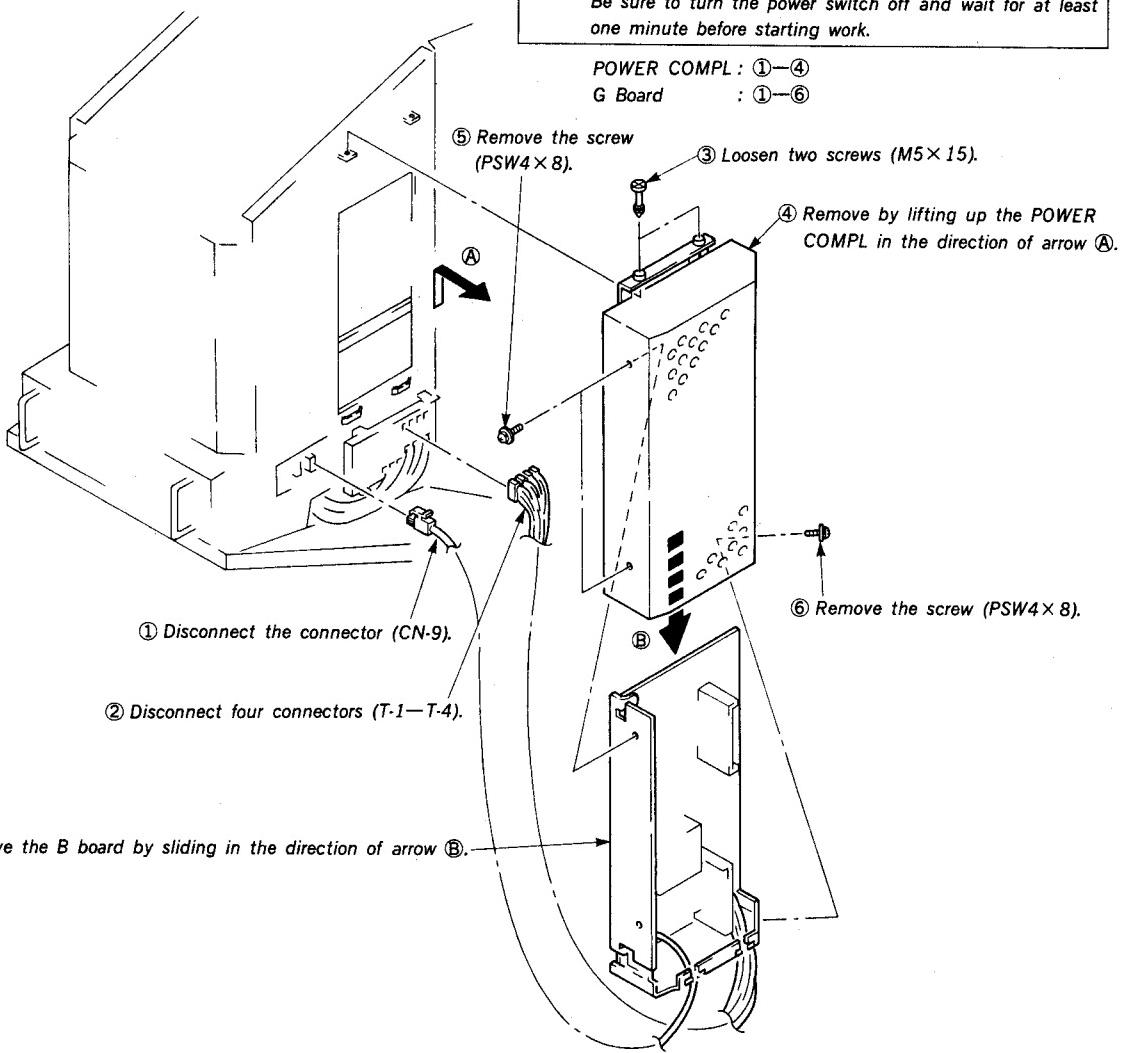
C COMPL : ⑤—⑨

U COMPL : ⑤, ⑧, ⑨, ⑭—㉑

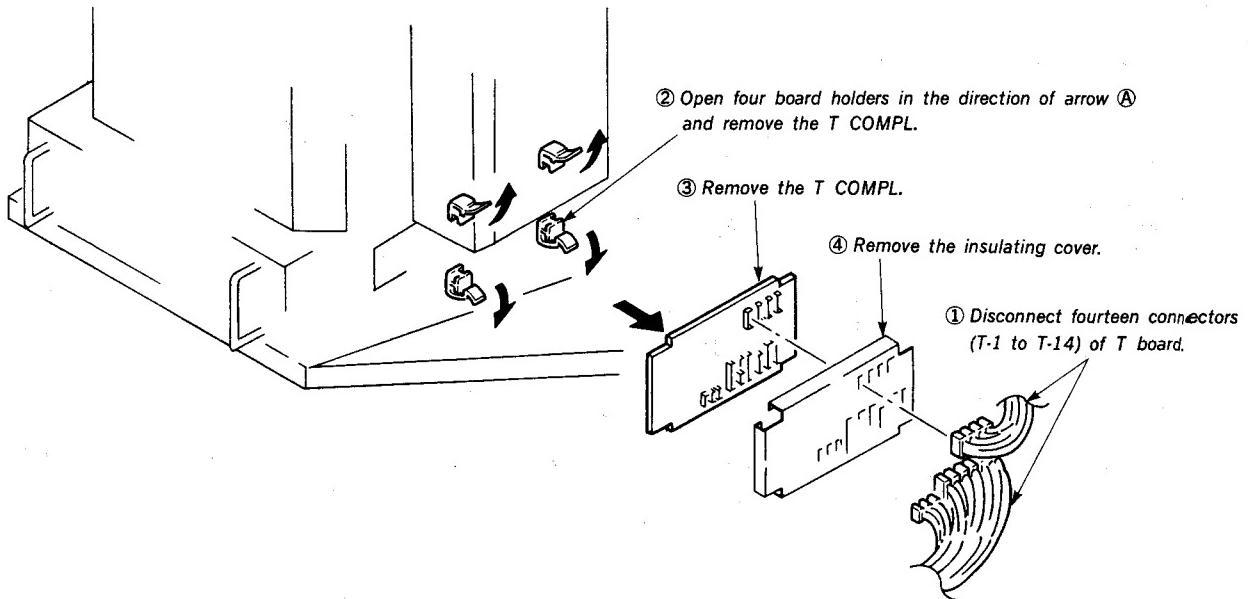


## 2-9. REMOVAL OF POWER COMPL AND G BOARD

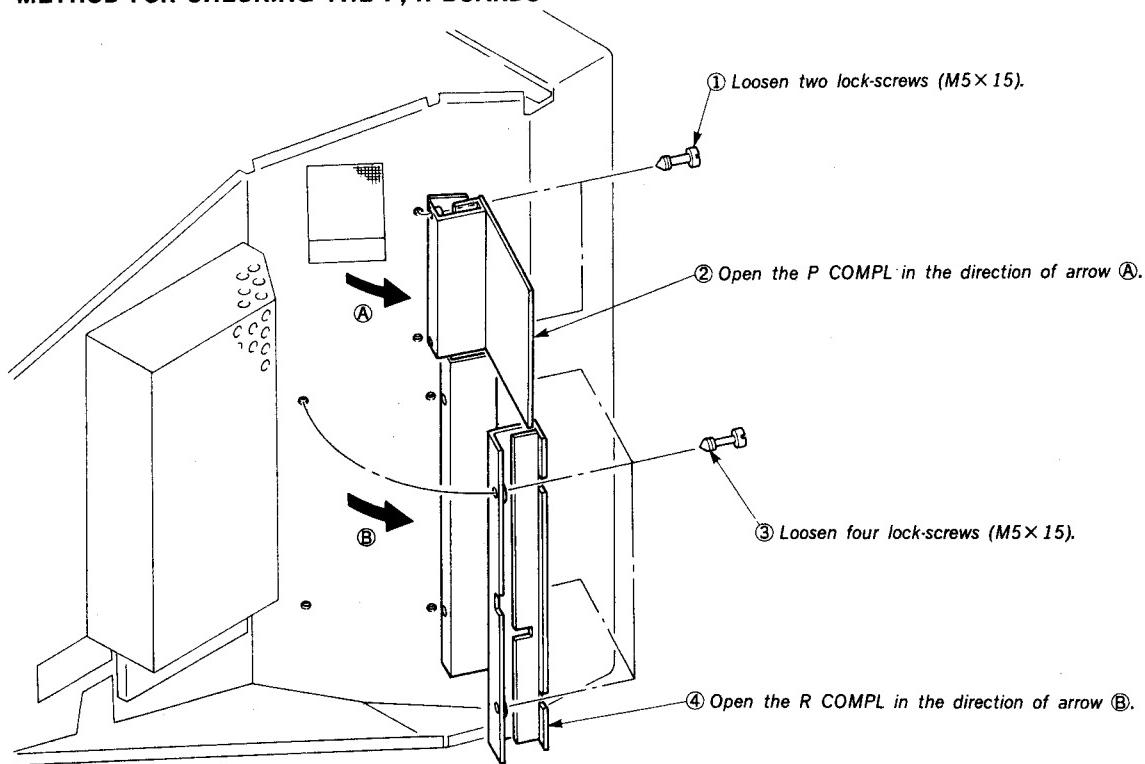
Note : Removal of the G board poses an electric shock hazard.  
Be sure to turn the power switch off and wait for at least one minute before starting work.



## 2-10. REMOVAL OF T COMPL

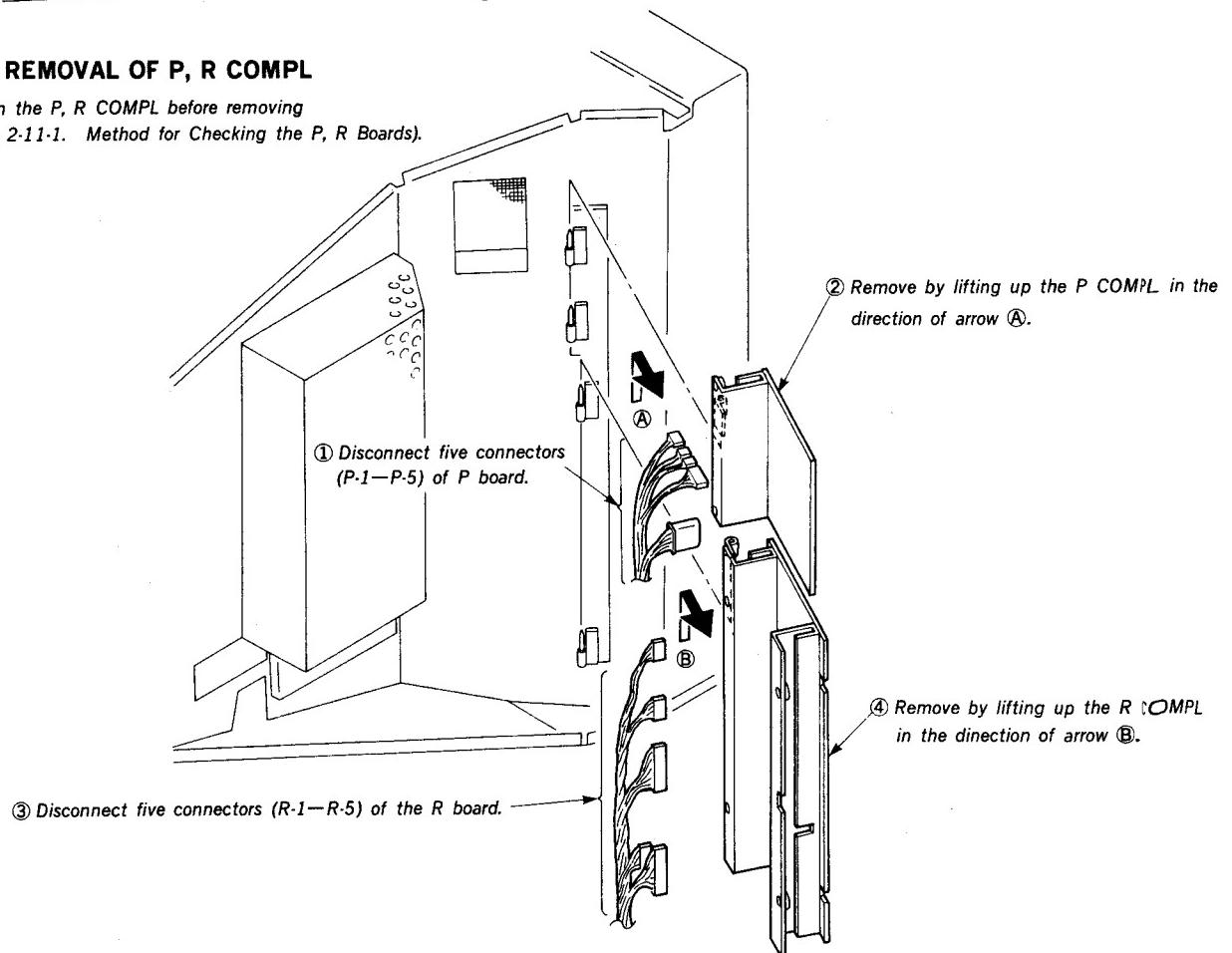


### 2-11-1. METHOD FOR CHECKING THE P, R BOARDS

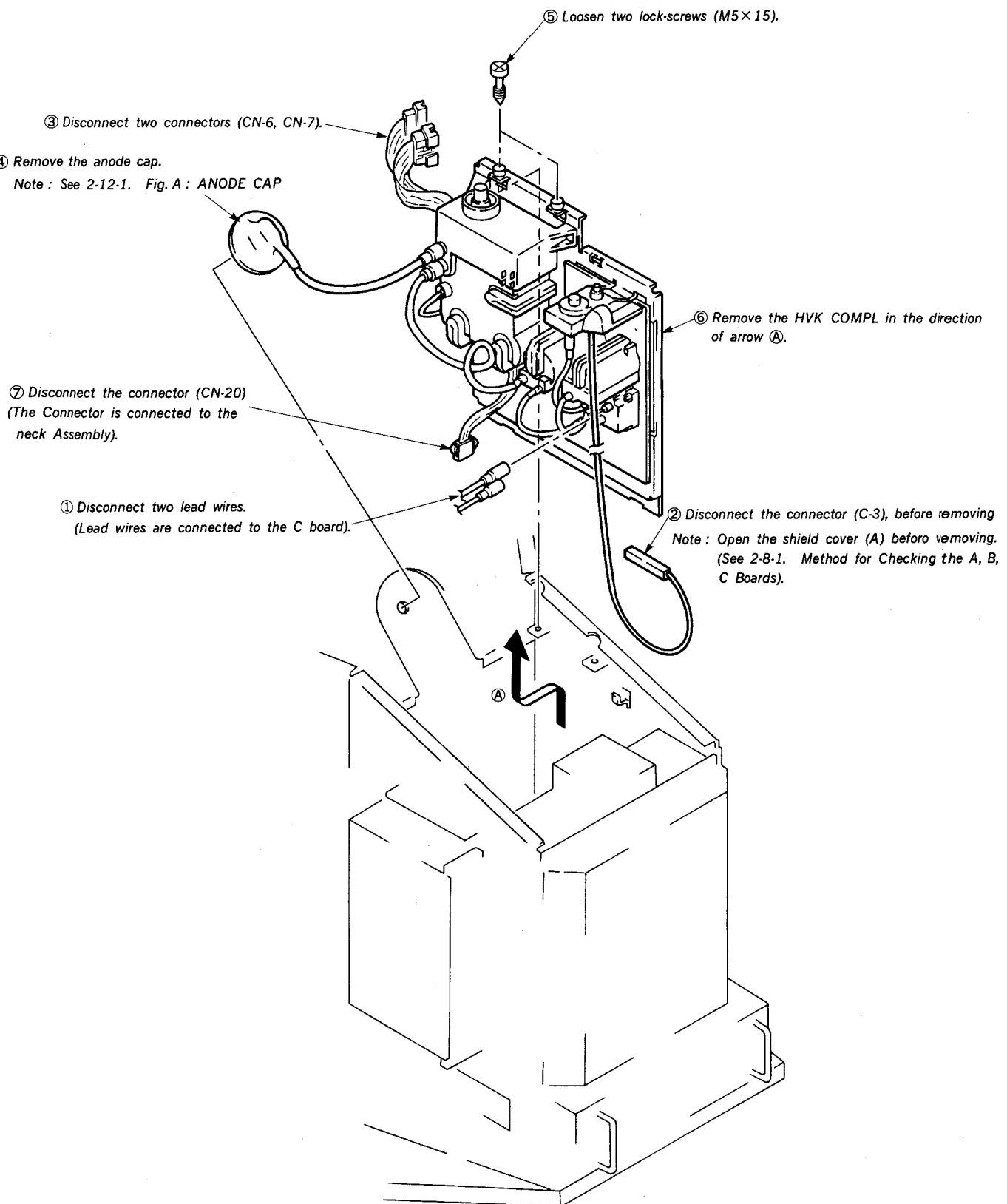


### 2-11-2. REMOVAL OF P, R COMPL

Note : Open the P, R COMPL before removing  
(See 2-11-1. Method for Checking the P, R Boards).

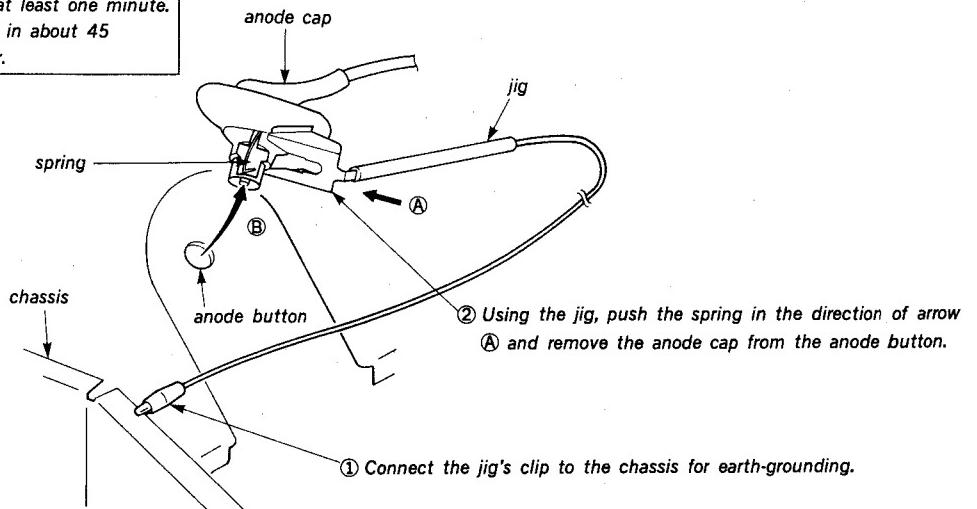


**2-12. REMOVAL OF HVK COMPL**



### 2-12-1. Fig. A : ANODE CAP

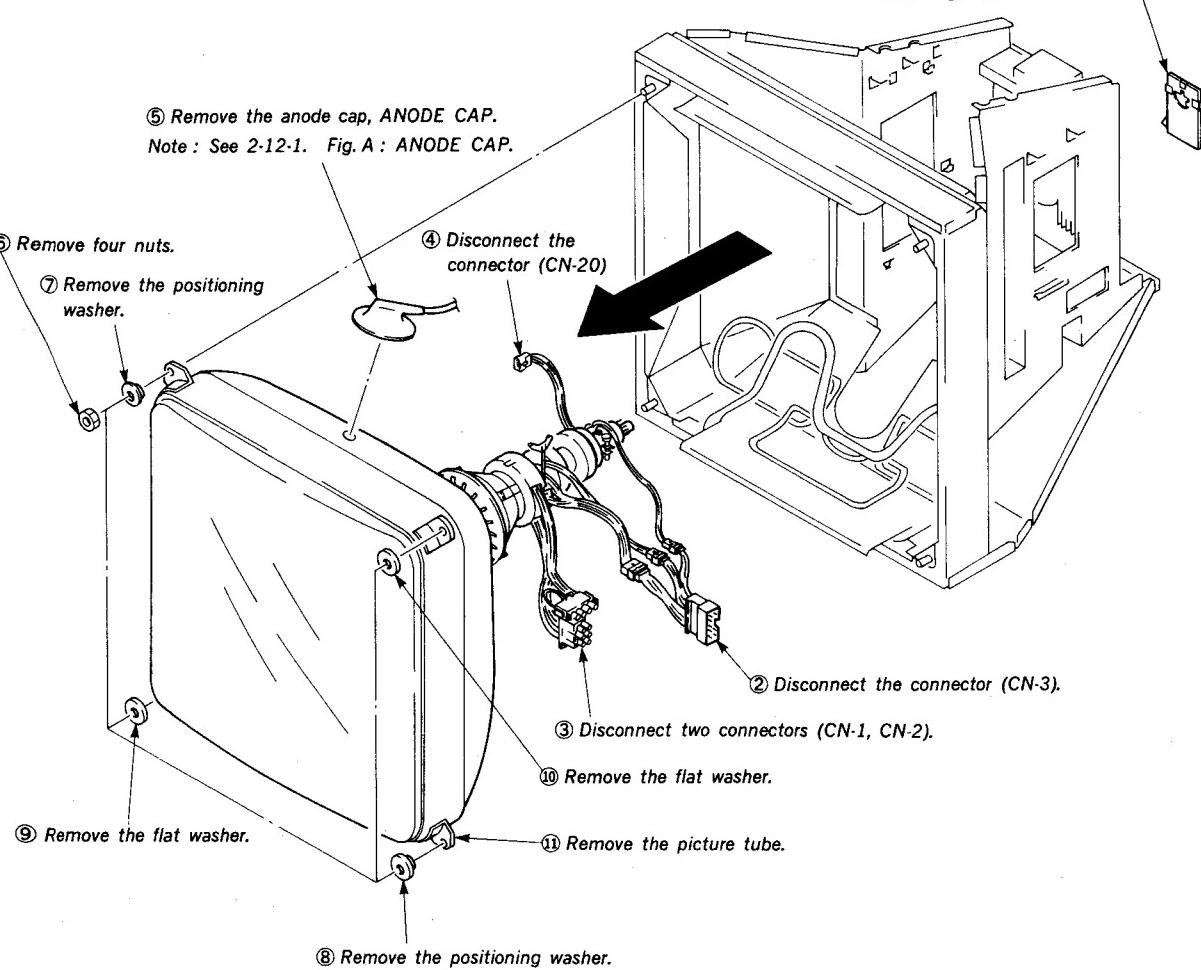
**Note :** When disconnecting the anode cap, be sure to turn the power switch off and wait for at least one minute. The high voltage drops to 30 volts in about 45 seconds after turning off the power.



### 2-13. REMOVAL OF PICTURE TUBE

① Remove the picture tube from the C board.

Note : See 2-8-2. Removal of ABC block and A, B, C, U COMPL ⑤—⑨.



### SECTION 3 THEORY OF CIRCUIT

#### 3-1. G BOARD

Transformer names are abbreviated as follows in the text and diagrams. Also refer to the power block diagram (Fig. 7).  
 PIT : Power Isolation Transformer  
 PRT : Power Regulator Transformer  
 POT : Power Output Transformer  
 HT : Heater Transformer  
 CDT : Converter Drive Transformer

##### 3-1-1. Principles of Control Operation

Fig. 1 shows the basic circuit structure. By driving Q1 and Q2 regulator out transistors at such a voltage that they are alternately turned on and off, a rectangular waveform voltage (Fig. 2) is obtained between  $\oplus$  and  $\ominus$  outputs. The connected  $\odot$  series capacitor and series resonance circuit composed of PIT and PRT generates a voltage waveform between  $\ominus$  and  $\odot$  as shown in Fig. 3. If PRT inductance is changed, resonance circuit impedance will also vary, affecting the pulse amplitude between  $\oplus$  and  $\odot$  outputs. The output can be stabilized by changing PRT inductance according to load variations.

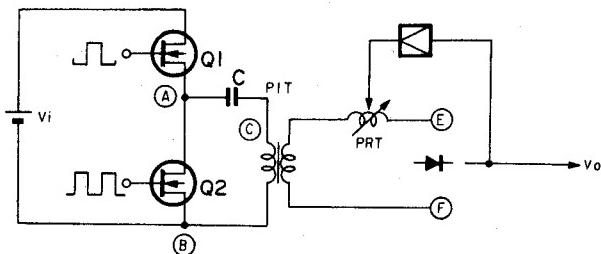
There are three independent resonance circuits connected between  $\oplus$  and  $\odot$ .

One :  $\pm 15V$ ,  $\pm 22V$ ,  $\pm 45V$  and  $+6.3V$  outputs

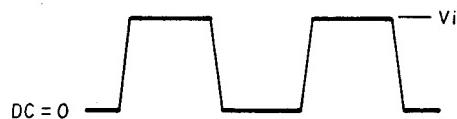
Two :  $+145V$  output

Three :  $+75V$ ,  $-70V$  and  $+170V$  outputs

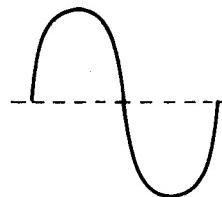
Since these resonance circuits are designed for little mutual interference, abnormal loads can be easily detected. The G board is composed of a current resonance type DC/DC converter having 11 different output voltages.



**Fig. 1.**



**Fig. 2.**



**Fig. 3.**

### 3-1-2. Oscillation and Synchronous Circuit of Power Supply : GA Board

The power output transistors Q1 and Q2 of the G Board are operated in synchronization with the horizontal deflection frequency  $f_H = 126.84\text{kHz}$ . The oscillation and synchronous circuit of the power supply are composed of IC101 (power supply circuit control IC) and IC102 (PLL IC) on the GA Board. The free run frequency is determined by C109, R120, R121, RV101 and is set to be about 120 kHz.

The converter drive pulse (C.DRV pulse) for high voltage circuit is formed on the E Board by the waveform shaping of the horizontal predrive pulse. The pulse is put into pin ⑭ of IC102 as a trigger pulse to synchronize with the horizontal deflection frequency. From pin ④ of IC102, the VCO (Voltage Controlled oscillator) output locked at  $2f_H$  is obtained and input to pin ⑤ of IC101. From pin ⑨ and ⑩ of IC101, the frequency locked predrive pulse at  $f_H$  is sent to the drive transistors Q5 and Q6 on the G Board, and the power output transistors Q1 and Q2 are driven via drive transformers T1 and T2.

### 3-1-3. Over Voltage Protection (OVP) Circuit

When any of output voltages +15V, +22V, +45V, +75V, +145V, or +170V exceeds the predetermined voltage limits, a high signal is sent to the D101 thyristor from the comparator on the GB or GC Board. This causes both D101 and then Q101 to switch on. The voltage of IC101 pin ④ then increases up to VREF thus stopping oscillation and cutting off the output. To reset, turn OFF the main switch or the front power switch, and then turn it ON again after a couple of minutes.

The anode potential of D101 is equal to the OVP signal, which is sent to the T Board. The OVP signal is normally high, but becomes low during OVP operation.

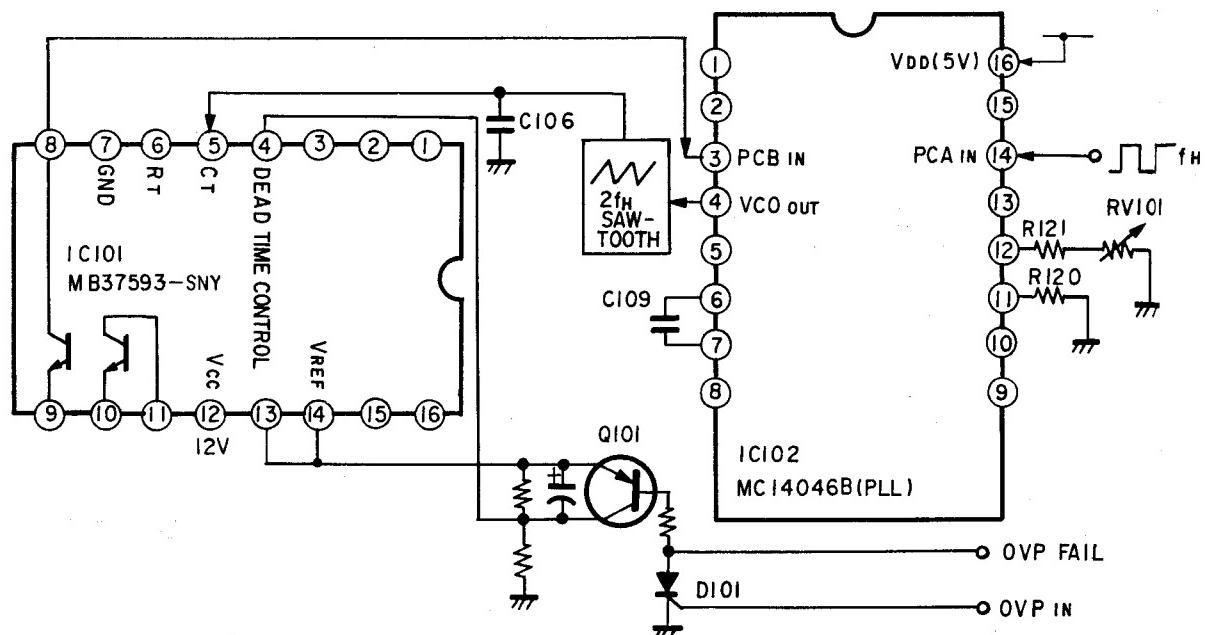
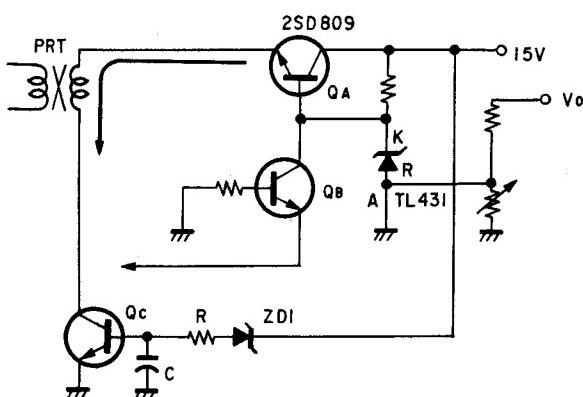


Fig. 4.

### 3-1-4. Control Circuit

The control circuit is shown in Figure 5.

The PRT (Power Regulation Transformer) is a saturable reactor with control winding. The inductance of the PRT is reduced when a control current flows in the control winding, and therefore the output voltage can be controlled. When the load current increases, the control current also increases and the inductance L of PRT is reduced. Therefore the output is maintained at a constant voltage. As shown in Figure 5, output voltage  $V_o$  is input to the error amplifier TL431 after being divided by the two resistors. The cathode of TL431 is connected with the base of transistor QA and the collector current is supplied to the control winding as the fluctuation of output voltage. Transistor QB consists of the over current protector. When the load current is increased, the emitter electric potential of QB is reduced, it conducts and QA is cut off. In this way the power supply is controlled. The transistor QC is for soft starting, and builds up the output voltage with the time constant determined by the resistor and capacitor. The POT (Power Output Transformer) and the HT (heater transformer) are connected as shown in Figure 6, and the stabilized output voltage of the PRT is supplied from the secondary of the transformer.



**Fig. 5. Control Circuit**

### 3-1-5. Over Voltage Detection Circuit

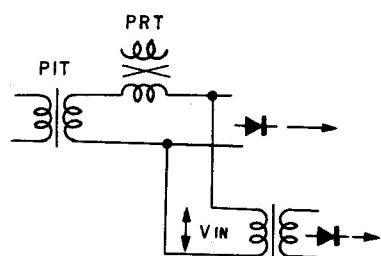
The output voltages, +15V, +22V, +45V, +75V, +145V and +170V are detected by the detecting resistors, and are compared with reference voltages at the comparator IC203 on the GB Board and IC303 on the GC Board respectively. The resulting outputs are gated as an OR Function and supplied to the gate of GA D101. This is normally low, and becomes high during OVP operation.

### 3-1-6. Failure Indicators of Output Voltages : T Board

All outputs except +5V digital system power and 12V standby voltage output are shut down when there is a  $\pm 15V$  overload. If this occurs, the red LE Ds on the T Board which are shown as [15V], [22V], [45V], [75V], [170V] will be illuminated.

When there is an overload of +22V, -22V, +45V or -45V, all four of these outputs are shutdown and the red LEDs [22V] and [45V] will be illuminated. When there is a +75V or +170V overload, the +75V, -70V and +170V outputs are shut down, and the red LEDs [75V] and [170V] will be illuminated.

In the case that these output voltages become abnormal, the over voltage protection circuit is triggered, and all outputs are shutdown with the exception of +5V and 12V standby voltage. At this time, the red [OVP] LED will be illuminated. When these voltage outputs are shutdown or the over voltage protection circuit is operated, the red LED shown as [G] will also light up.



**Fig. 6.**

Block Diagram

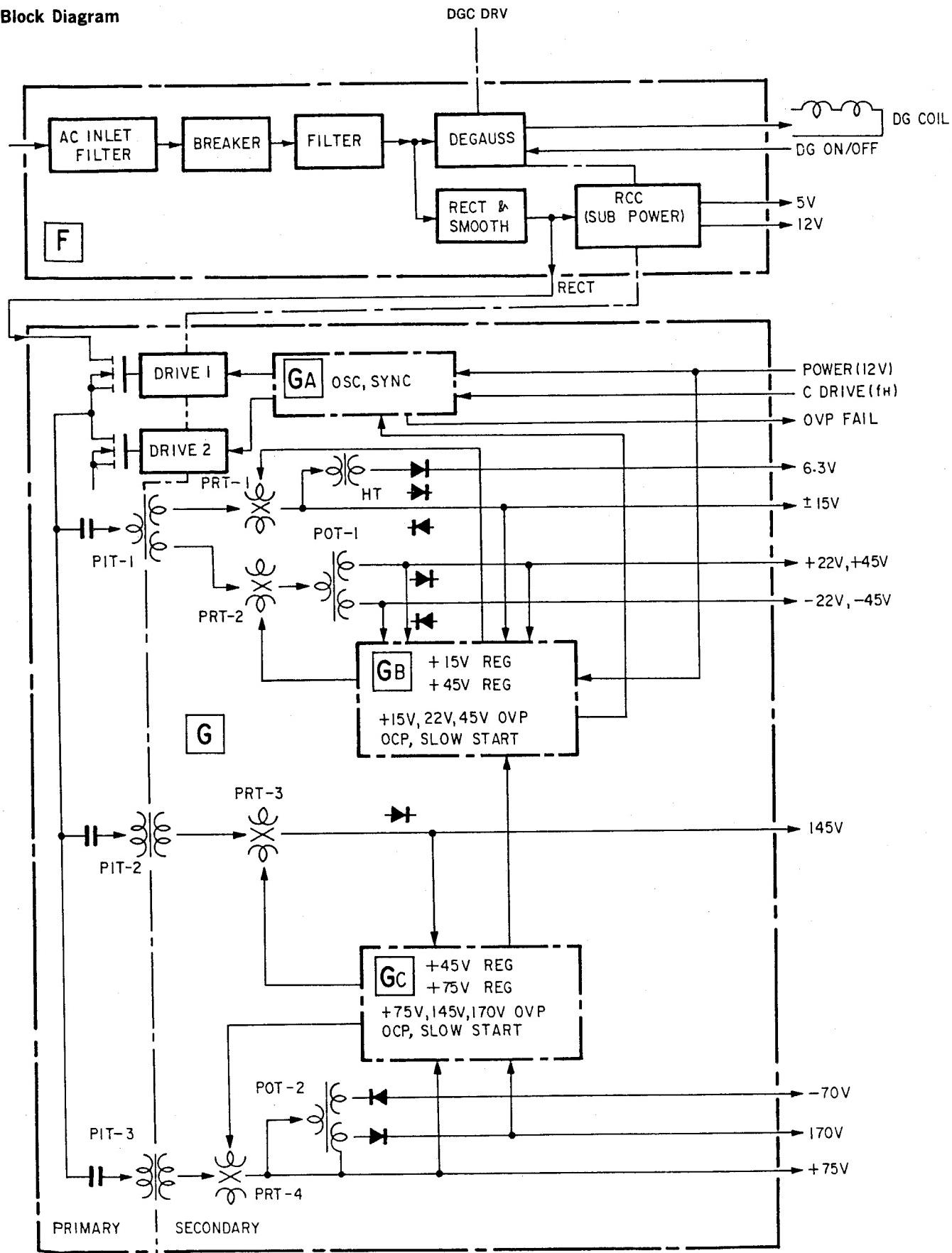
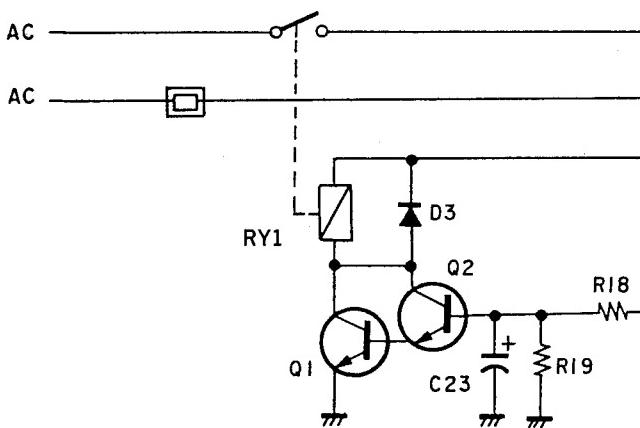


Fig. 7.

### 3-2. (1) F Board (2801C, 2802C)

The F board mainly consists of the filter section, rectification circuit, degauss circuit for CRT degaussing operation and the auxiliary power supply called RCC (Ringing Choke Converter). AC voltage, which is supplied through the AC inlet, is input to the filter section. The filter section has the line filter transformers LFT1 (T1) and LFT2 (T2) which are connected in parallel. After passing through the filter section, the AC voltage is converted into DC voltage at the voltage doubler rectification circuit and is input to the power supply circuit on the G Board.



### (2) F Board (2801C2, 2802C2)

The F board mainly consists of the filter section, rectification circuit, degauss circuit for CRT degaussing operation and the auxiliary power supply called RCC (Ringing Choke Converter). AC voltage, which is supplied through the AC inlet, is input to the filter section. The filter section has the line filter transformers LFT1 (T1) and LFT2 (T2) which are connected in series. After passing through the filter section, the AC voltage is converted into DC voltage at the bridge rectification circuit and is input to the power supply circuit on the G Board.

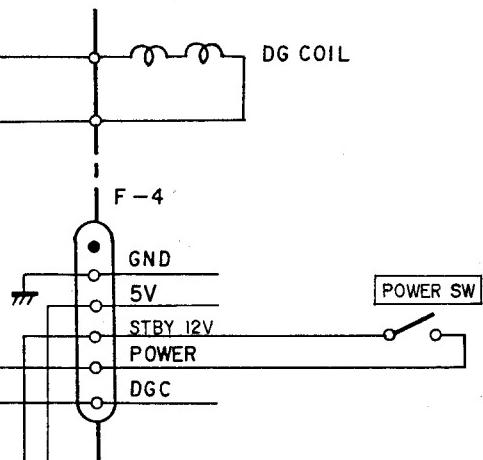


Fig. 8.

#### 3-2-1. Degauss Circuit

The high/low signal is supplied to the DGC input of the F-4 connector from the M board. A high signal switches on Q1, Q2 and RY1, thus initiating the degaussing operation.

#### 3-2-2. RCC (Ringing Choke Converter) Circuit

This is an auxiliary power supply for providing 12V standby voltage and 5V digital system power. IC1 (MA1050) is a HIC for RCC with a built-in current limiter.

QA is a converter output transistor. QB, on the other hand, is a control/current-limit transistor that controls pulse width according to output voltage. If voltage is detected by the detecting coil wound around T4, QB will turn on to limit the QA collector current, thereby providing overload protection for the power supply.

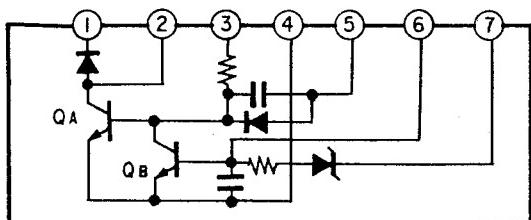


Fig. 9.

If the 12V line rises, the 15 volt zener diode D4 will turn on, the thyristor D5 will conduct, and the 12V line will become grounded. To reset, turn the main SW (breaker) off for a few minutes, and then turn it back on.

The RCC will continue to operate while the main breaker is on (even if the POWER SW on the front panel J Board is switched off). When the front panel SW is switched off, the voltage of pin ② of IC4 (SI3050C) will become low and the 5V output will shut off.

**Note:** The RECT section of the F and G Boards will be powered at approximately 300V as long as the main breaker is on.

3-3. P AND K BOARDS

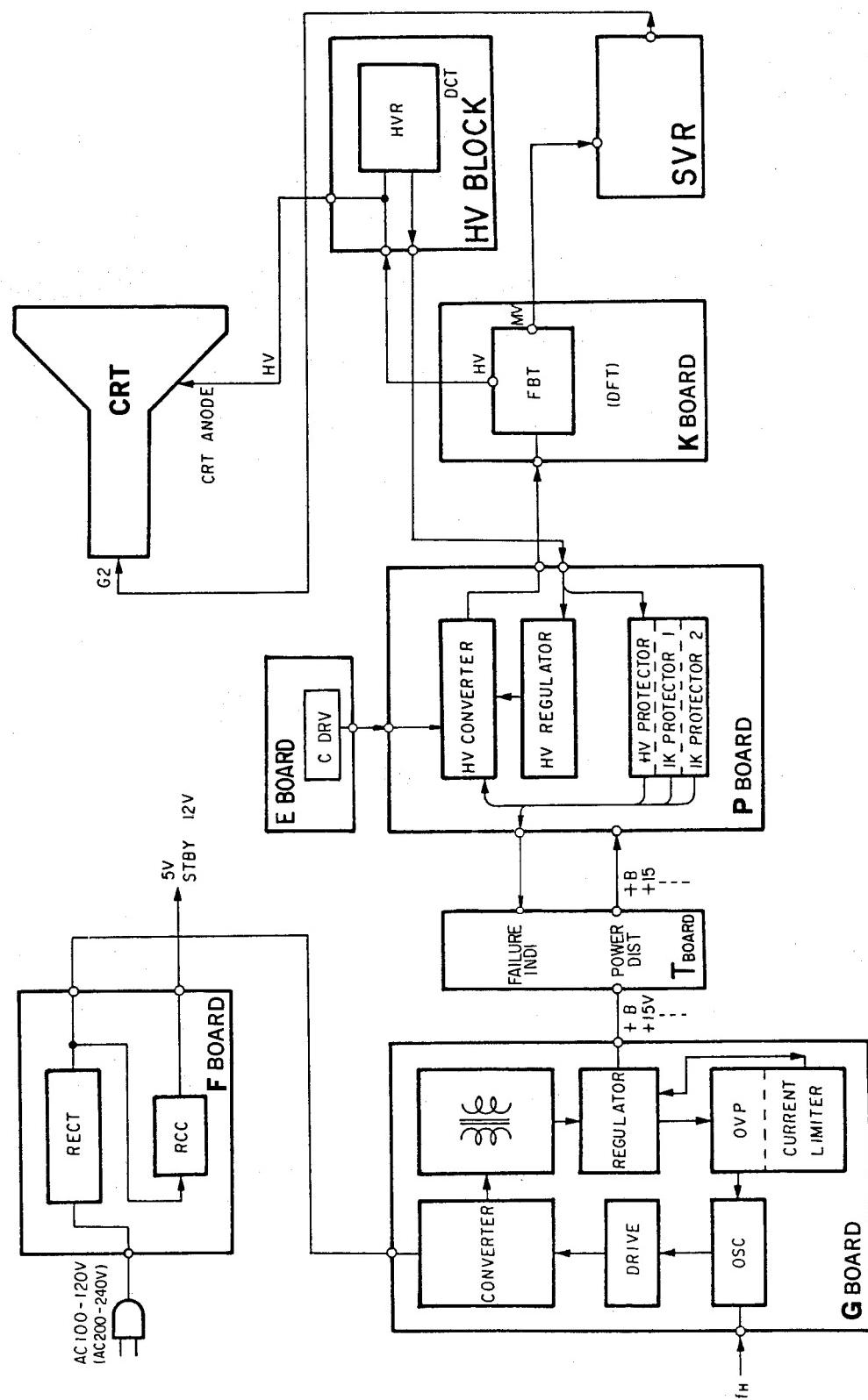


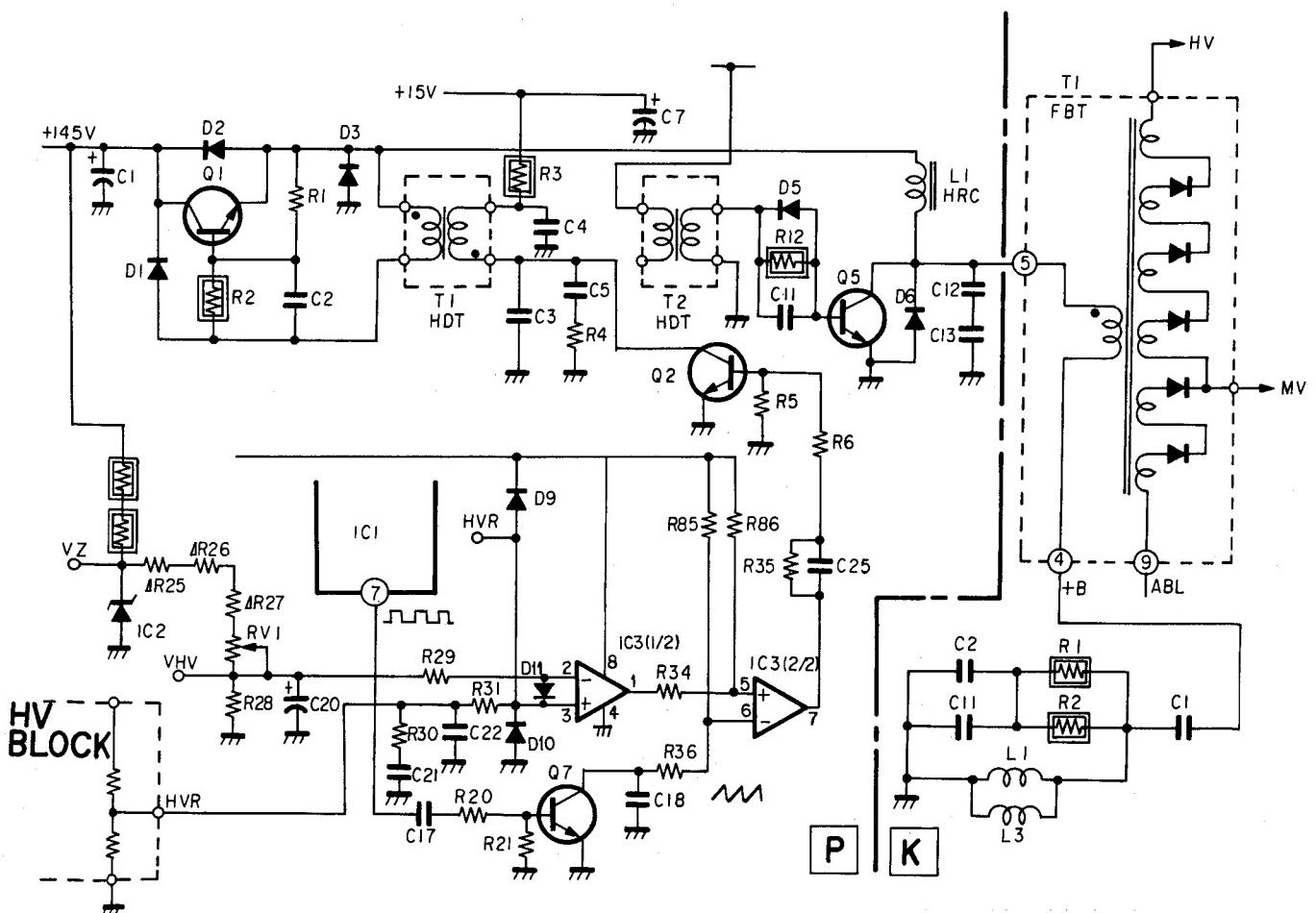
Fig. 10. Power Supply High Voltage System Block Diagram

### **3-3-1. HV Regulator Circuit**

The HV regulator reference voltage is generated by IC2. Vz is input to the  $\ominus$  pin of IC3 (1/2) through a divider consisting of R25, R26, R27, RV1 and R28. High voltage is divided in the HV BLOCK and the resultant voltage (HVR) is supplied to the  $\oplus$  pin of IC3 (1/2). IC3 (1/2) compares HVR and VHV, and outputs the reference to the  $\oplus$  pin of IC3 (2/2). The square waveoutput from pin ⑦ of IC1 (monostable multivibrator) is inverted by Q7, and integrated by C18 to form a sawtooth wave. IC3 (2/2)is a PWM that compares the sawtooth voltage with the input voltage at its  $\oplus$  pin, thereby

changing the pulse width output from IC3 (2/2). If the HVR voltage drops, the pulse width becomes narrower and the Q2 turn-on period becomes shorter. Thus, the Q1 on period becomes longer and the peak current to the HRC (HV Regulator Convertor) increases.

This causes the FBT pulse voltage at Q5 (HV convertor) to increase which provides HV stabilization. If the high voltage increases, the opposite operation occurs stabilizing the high voltage.



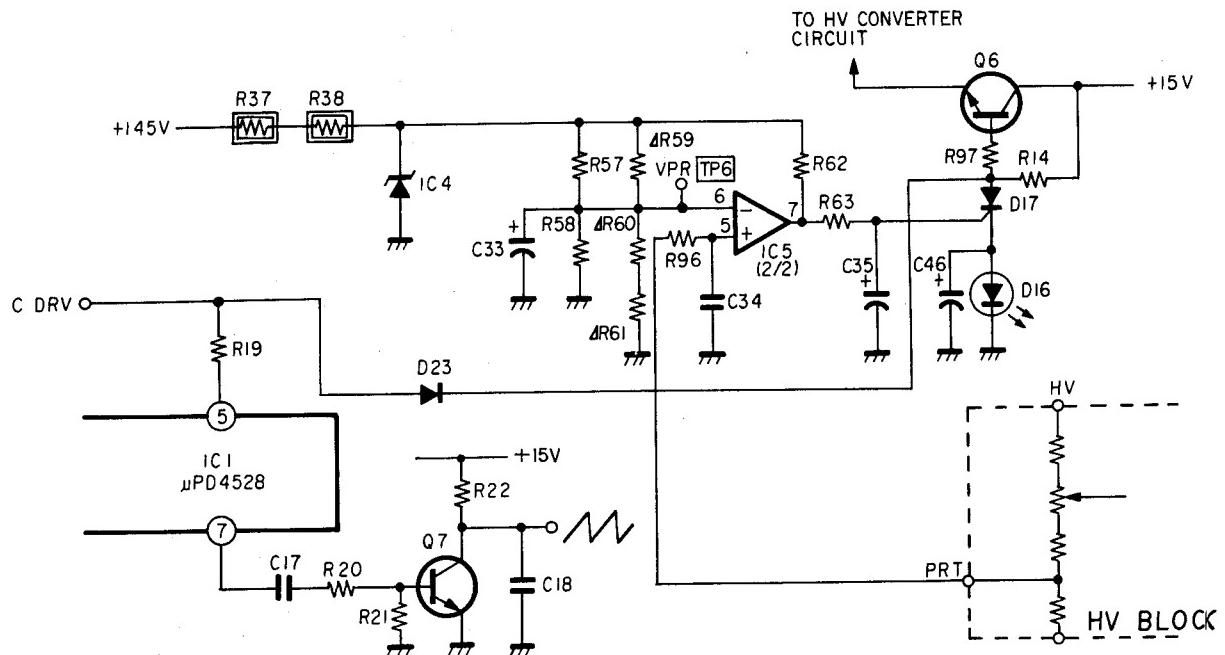
**Fig. 11.**

### **3-3-2. HV Protection Circuit**

The reference voltage for the HV protector is generated by IC4. The operating voltage of the HV protection circuit is determined by R57 through R61. Normally, the VPR voltage at the  $\ominus$  pin of IC5 is higher than the PRT voltage at the  $\oplus$  pin of IC5. The output level of pin ⑦ is low.

If the HV rises beyond normal levels, the voltage at the PRT terminal will also rise. When the PRT voltage exceeds the VPR voltage, the output of IC5 will become high, D17 will turn on, Q6 will switch off, and the power supply (+15V) for the HV converter drive circuit will turn off, shutting down high voltage operation. At this time, the HV failure LED (D16) will also light up.

The anode terminal of D17 is connected to pin ⑤ of IC1 through D23. IC1 (monostable multivibrator) generates the input pulses for the Q7 sawtooth wave form generator. When D17 is switched on as a result of the HV's rising, the CDRV pulse supplied to IC1 becomes disabled. The HV regulator circuit comparison sawtooth wave disappears as the IC1 pin ⑦ pulse is no longer output. Thus, the shutting down of Q7 causes IC3 (PWM) to cease operation which prevents HV regulation.



**Fig. 12.**

### 3-3-3. Beam Current Protector

If the CRT anode current increases beyond a predetermined value, the beam protector circuits inhibit high voltage operation. This monitor incorporates two individual beam protectors to provide double current protection.

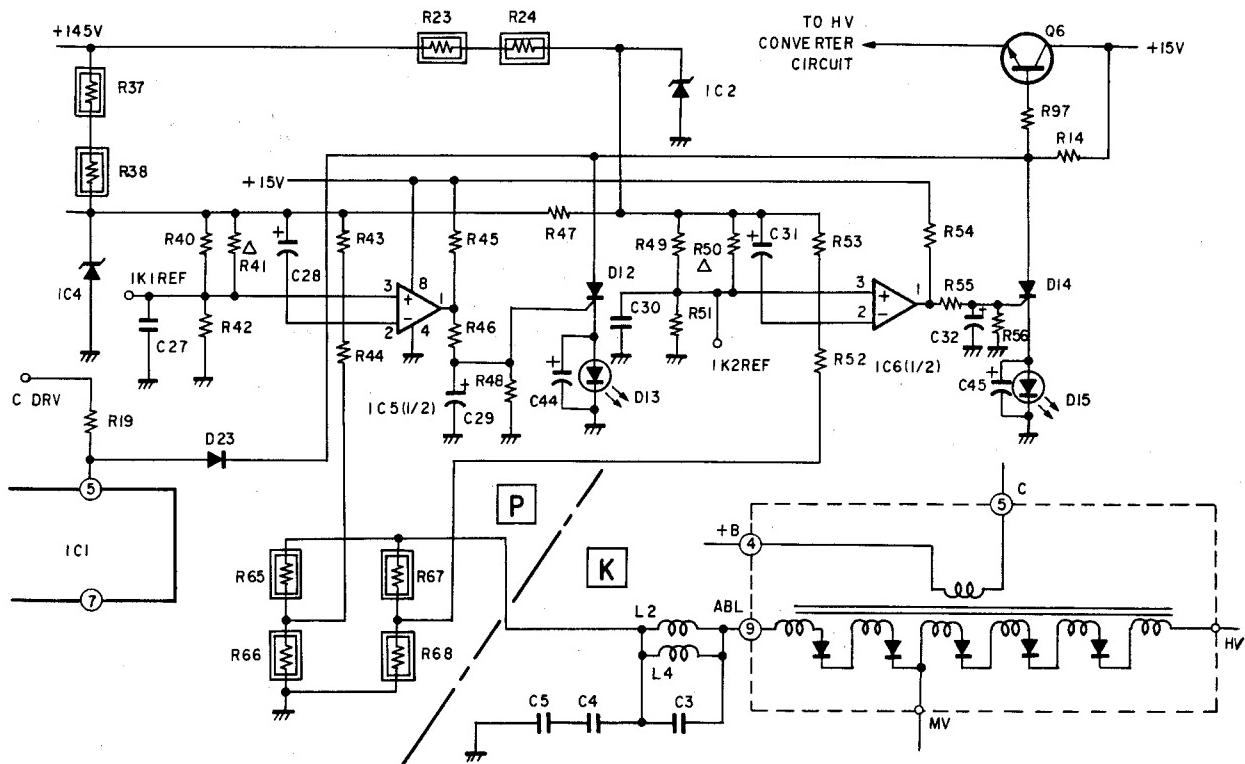
The reference voltage for Beam Protector 1 is determined by IC4, and the reference voltage for Beam Protector 2 by IC2. The operating voltage for Beam Protection circuits 1 and 2 is determined by  $\Delta R41$  and  $\Delta R50$  respectively.

#### <Description of Beam Protector 1 Operation>

Normally, the level at pin ② of the IC5 (1/2) comparator is higher than that of pin ③, and the IC output is low.

The voltage at R66 becomes more negative as the anode current increases. This causes the voltage at pin ② of IC5 to decrease. When the voltage at pin ② becomes less than that of pin ③, the IC5 output increases, D12 is switched on, and Q6 turns off the power (+15V) to the HV converter circuit. This causes a high voltage shut down as explained in 3-3-2. HV Protection Circuit.

At this time, the K1 failure LED (D13) will light up. The operation of the backup circuit (Beam Protector 2) is the same as above.



**Fig. 13.**

### 3-4. T, H, L, J1, J2 AND J3 BOARDS

The functions of the T board include power supply distribution, failure indication, and failure data transfer. The output voltages from the G board are distributed to the various boards via the T board. The failure signals from various boards are input to the T board.

#### 3-4-1. Description of Indicators

(Red LED is illuminated when there is an abnormality, and green LED illuminated when normal)

**OVP**: (Over Voltage Protector):

.....When the 170V, 145V, 75V, 45V, 22V, or 15V voltage of the G board becomes too high due to a malfunction, the protector is activated and the LEDs are illuminated:

**170V**: Illuminated when the +170V line fails.

**145V**: Illuminated when the +145V line fails.

**75V**: Illuminated when the +75V line fails.

**45V**: Illuminated when the +45V line fails.

**22V**: Illuminated when the +22V line fails.

**15V**: Illuminated when the +15V line fails.

**A**: Illuminated when there is an abnormality in the A or B boards.

**E**: Illuminated when there is an abnormality in H out or V out of the E board.

**G**: Illuminated when the G board output voltage decreases during OVP operation.

**M**: Illuminated when there is an abnormality in the M1 or M2 boards.

**P**: Illuminated when the protector circuit on the P board is activated.

**R**: Illuminated when there is an abnormality in the DCT-1, DCT-2, DCT-3, AQP, DQP or DFX circuits of the R board.

**S**: Illuminated when there is an abnormality in the CY-1 or CY-2 circuits of the S board.

**FAN**: Illuminated when one of the three fans fails.

**STBY 12V**: Illuminated when the backup 12V power supply is operating properly.

**5V**: Illuminated when the 5V power supply is operating properly.

The A, E, G, M, P, R, S, and FAN failure signals are input to pass through an OR gate and the result is transmitted to the L board which will indicate a system failure.

These failure signals are converted to serial data by IC3 and transmitted to the M board.

#### 3-4-2. H Board

Equipped with a 15-pin D-sub connector for connection to an external controller for service adjustments, and with an 8-pin DIN connector for connection to an external landing sensor.

#### 3-4-3. L Board

Equipped with power and failure indicators. Power status and failure status are indicated with green and red LED's respectively.

#### 3-4-4. J1 Board

Equipped with a power SW.

#### 3-4-5. J2 Board

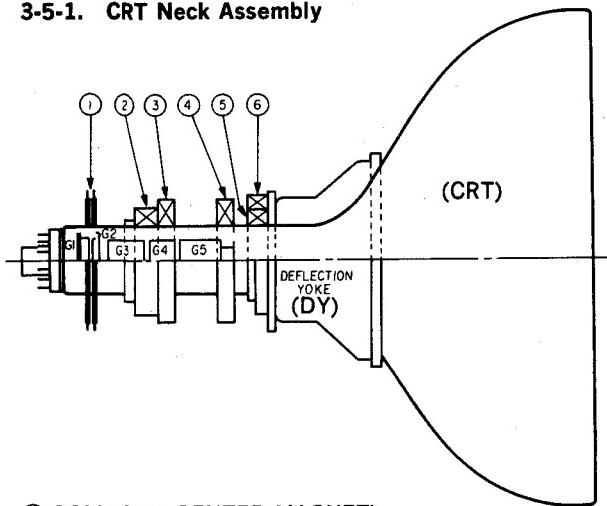
Equipped with contrast control.

#### 3-4-6. J3 Board

Equipped with H.STAT, V.STAT, V.CENT and BRIGHTNESS controls, and a manual degauss switch.

### 3-5. CRT

#### 3-5-1. CRT Neck Assembly



- ① GCM (GUN CENTER MAGNET)
- ② NTC (NECK TWIST COIL)
- ③ DQP (DOUBLE QUADRUPOLE COIL)
- ④ AVMC (ASYMMETRIC VERTICAL MISCONVERGENCE COIL)
- ⑤ CY (CONVERGENCE YOKE)
- ⑥ PC (PURITY COIL)

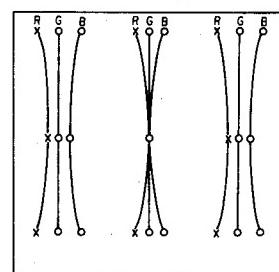
**Fig. 14. CRT Neck Assembly**

The CRT neck assembly is shown in Fig. 14. As shown in the diagram above, the neck assembly uses six types of coils and magnets, excluding the deflection yoke. The following is a description of the functions of the neck assembly.

- ① GCM ..... Magnet for correction of gun centering.
- ② NTC ..... Coil used mainly for correction of static misconvergence in the vertical direction caused by twisting of the electron gun.
- ③ DQP ..... Double Quadrupole to correct beam spot shape.
- ④ AVMC ..... Coil for correction of an even vertical misconvergence.
- ⑤ CY ..... Coil for correction of dynamic vertical misconvergence.
- ⑥ Purity Coil ..... Coil for correction of mislanding generated by effects of vertical ground magnetism or lateral shifting of the electron gun center from the CRT axis.

#### • Horizontal Convergence Correction Method

This unit utilizes a static electric convergence system for correction of horizontal misconvergence. The DY coil's magnetic distribution is almost even in order to prevent distortion of the beam spot. Thus, while the focus characteristics are superb, dynamic misconvergence in the horizontal direction occurs as shown in Fig.15.

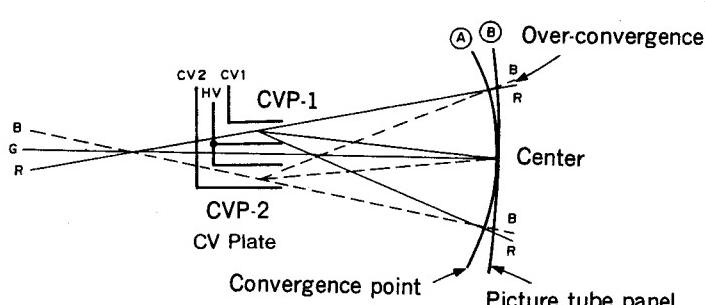


**Fig. 15. Dynamic Misconvergence**

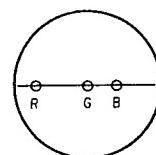
As shown in Fig. 16, when DC voltage is applied to the CV electrode for convergence at the center of the screen, the optimum position on the sphere is indicated by Ⓐ. However, as the front panel indicated by Ⓑ is nearly flat, over-convergence occurs at both sides of the screen.

Thus, dynamic misconvergence occurs as shown below.

(View from the top of the CRT)



**Fig. 16. Convergence Principles**



**Fig. 17. Assymetrical Components of Horizontal Convergence**

When asymmetrical horizontal misconvergence occurs as shown above in Fig. 17, a BMC magnet is usually used to correct it. However, in the case of the DDM, such use would invite deterioration of the focus characteristics as it will distort the spot shape.

The convergence plate in this unit is divided into CVP-1 and CVP-2 for asymmetrical correction without deterioration of the focus characteristics by applying independent correction voltages to the respective CV electrodes.

The CV plate construction is shown in Fig. 18. The convergence voltage CV1 for correction of red misconvergence is applied to electrode  $\oplus$  (CVP-1) and the correction voltage CV2 for the blue misconvergence is applied to electrode  $\odot$  (CVP-2).

Since high voltage ( $HV = 30.0$  kV) is applied to electrode  $\oplus$ , the red beam is bent by the electrical field created by CV1 and HV, and the blue beam is bent in the same manner by the electrical field created by CV2 and HV. This provides convergence correction.

(CV1, CV2 are approx. 29.1 kV)

#### Convergence Electrode

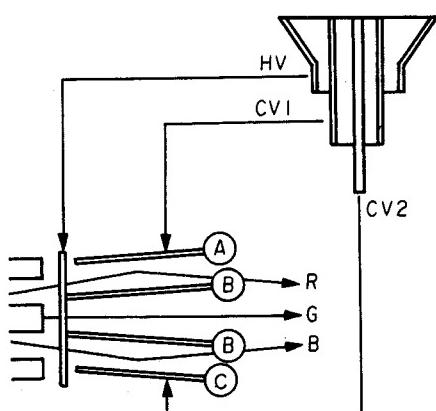


Fig. 18. Structure of CV Plate

### 3-6. E BOARD

The E board consists of horizontal and vertical oscillation, drive, and output circuits.

#### 3-6-1. Horizontal Oscillation Circuit

The H.sync signal (negative TTL) is sent to the E board from the B board through the M board. This signal then passes through the phase shifter in IC9 before being input to the AFC circuit.

The amount of phase shifting applied by the phase shifter is controlled by the Y.SKEW signal from the M board. The Y.SKEW signal contains a DC component for H. phase, a parabolic component for Y.BOW, and a sawtooth component for the Y.SKEW adjustment.

The horizontal pulse created by the horizontal output circuit is input to pin ④ of IC9. The resulting sawtooth wave is sent

to the AFC circuit. The amount of phase shift of the sync signal and deflection circuit is obtained from pin ⑦ as DC voltage. This is fed back to pin ⑧, and the horizontal oscillation frequency is controlled by altering the DC voltage to correct the frequency shift.

The Y.SKEW signal is applied to pin ⑦, and corrects the bend and tilt of the vertical center line.

RV3 is also connected to pin ⑧ to control the horizontal oscillation frequency by altering the DC voltage at pin ⑧.

This signal is output to pin ⑫ as a 126.8 kHz horizontal oscillation pulse, and is sent to the horizontal drive circuit.

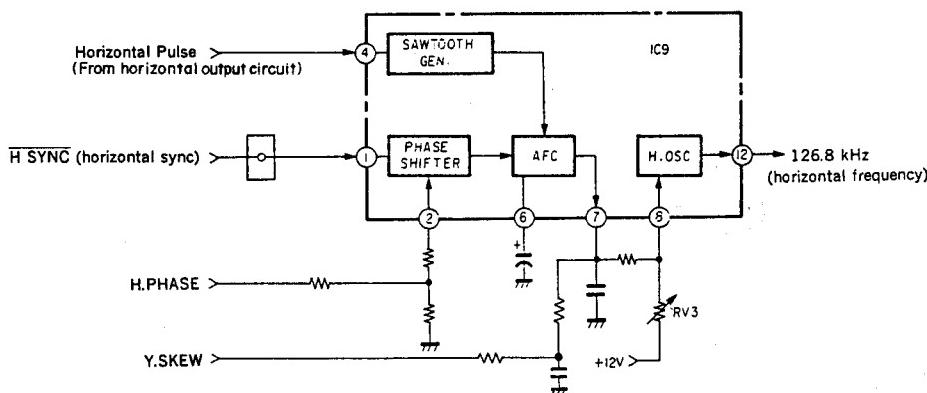


Fig. 19. Horizontal Oscillation Circuit

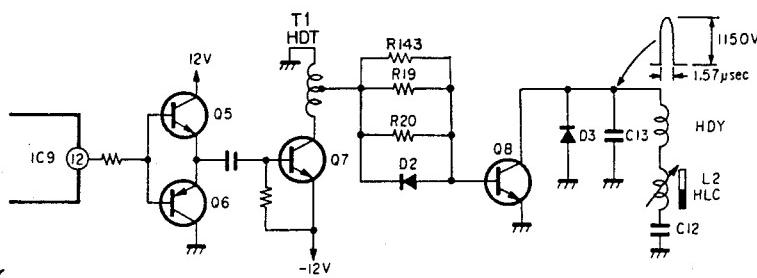
#### 3-6-2. Horizontal Drive Circuit

The pre-drive output pulse from pin ⑫ of IC9 is input to the Q7 horizontal drive circuit through the Q5 and Q6 buffer circuit.

A choke-type HDT (horizontal drive transformer) is connected to the drive circuit, and the emitter of Q7 is connected to -12V. (Fig. 20)

As the horizontal frequency in this unit is high, it is necessary to shorten the storage time caused by the drive circuit. The

basic operation is as follows. When the horizontal output transistor Q8 is OFF, the horizontal drive transistor Q7 switches on and the negative base current is supplied by the -12V power supply through D2 to shorten the storage time and to store energy in the HDT. When Q7 is switched OFF, this energy is discharged as the Q8 drive current through R19, R20 and R143. This drives Q8 and allows the horizontal deflection current to flow.



D3: Damper diode

C13: Resonant capacitor

L2: Horizontal linearity correction coil

C12: S correction capacitor

Fig. 20. Horizontal Drive Circuit

### 3-6-3. Horizontal Pincushion Correction Circuit

The H DEF signal (parabolic voltage waveform) from the M board is used to correct the horizontal pincushion distortion. The H DEF signal modulates the voltage supplied to the horizontal output transistor by the circuit formed from the output transistor Q2 and the error amplifier IC1.

Q16 is a current limiter which operates when the load current rises to 1.3 amps. The collector is connected to pin ⑬ of IC9 through R132 and R133. When an overload condition turns on Q16, the voltage at IC9 pin ⑬ becomes high. This stops the operation of the horizontal oscillator, and the circuit is protected.

### 3-6-4. H. Center Adjustment Circuit (Fig. 21)

The H CENT circuit uses a DC voltage supplied from IC3 and sent to the horizontal deflection coil through L3 (HCC). This performs the H CENT adjustment. First, the sawtooth voltage used for comparison is generated by the HD trigger from the M board, and is then input to the  $\ominus$  pin of IC5 (1/2). The pulse width is modulated by the control voltage (H CENT) from the M board which is input to the IC5  $\oplus$  pin. The modulated pulse is transmitted by photocoupler IC2. IC3 uses the power supplies ④ and ⑧ shown below, which are created using T2, D4, and D5. Operation amplifier IC3 supplies DC current to the horizontal deflection coil.

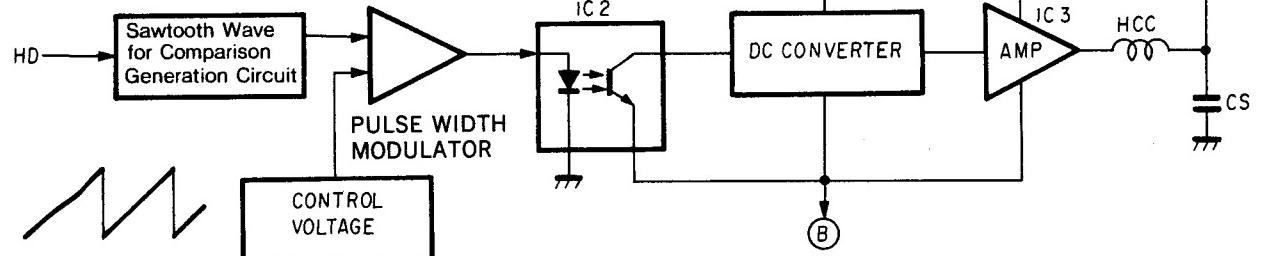


Fig. 21. H Center Control Circuit

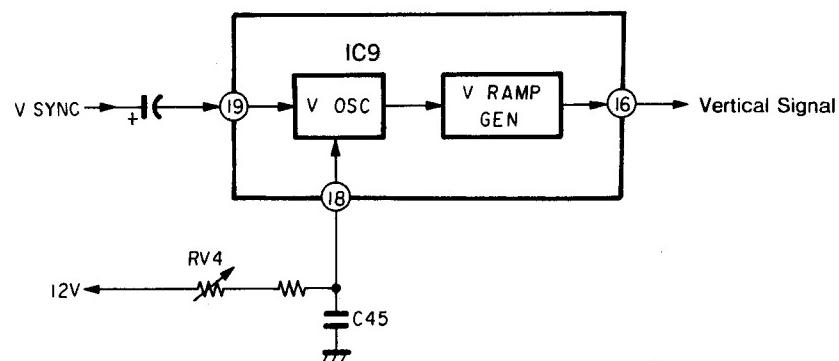


Fig. 22. Vertical Oscillation Circuit

### **3-6-6. Vertical Deflection Output Circuit**

The sawtooth wave for vertical deflection and the top and bottom pin correction wave are input to the Q18 differential amplifier. After being driven by Q19 this signal is amplified by the SEPP complementary amplifier formed by Q20, Q21, Q22, and Q23. This signal then drives the vertical deflection yoke coil.

The top and bottom pin correction transformer T3 (VPT) is connected to the output. T3 extracts only the top and bottom pin correction wave for the horizontal period, boosts it, and modulates the deflection yoke coil current with its secondary wiring. R115, R116, and C66 are connected to T3 in order to moderate the waveform of T3 and the waveform emitted by the two terminals of the vertical deflection yoke coil. This stabilizes the deflection in the upper portion of the screen. R117, R118, R137 and R138 connected to the bottom of the VPT secondary wiring detect the deflection yoke coil current, and supply negative feedback by R119 to improve the waveform. Thyristor D20 is switched ON by applying the vertical retrace to the gate by R112 and C64. This improves the linearity of the deflection current by high voltage driving during the retrace period.

### **3-6-7. Top-Bottom Pin Correction Wave Generator (EA Board)**

The T/B AMP signal (vertical sawtooth wave) from the M board is input to IC1 on the EA board, and is output after being inverted by pin ①.

The falling edge of the HD pulse input to pin ⑩ of the EA board is used to create a phase shifting pulse by Q1 and Q2. The T/B phase input to the pin is inverted by IC1, enters the phase shift circuit formed by Q3 and Q4 and the phase of the T/B phase pulse is adjusted. This pulse is input to the Miller integrator formed by IC2 as a rise pulse. The Miller integrator creates a horizontal period sawtooth wave with the voltage determined by C6, R11, and pin ① of IC1.

Thus, the output wave is the horizontal sawtooth wave modulated by the vertical sawtooth wave as the signal at pin ① of IC1 is the vertical period sawtooth wave. This output is input to the vertical deflection circuit as the T & B correction wave.

### 3-7. R BOARD

#### 3-7-1. Horizontal Convergence Correction Output Circuit

The DCT (Dynamic Convergence Transformer) is driven by the R board for correction of the convergence in the horizontal direction.

The A block diagram of the output circuit for horizontal convergence correction is shown in Fig. 23.

A pulse (HSP) is applied to the R board as the correction wave for clamping of the horizontal period correction signals H.AMP (R/B) and H.AMP (B) and for the vertical period correction signals Y.BOW (R/B) and Y.BOW (B) which are created by the M2 board.

H.AMP (R/B) is input to the drive circuit, formed by DCT1 and DCT2, through R1 and R3. Correction of red and blue misconvergence is performed simultaneously.

The H.AMP (R/B) signal is divided by R3 and R5, and is input to the differential amplification circuit formed by Q1 and Q2. At this time,  $\overline{HSP}$  is inverted by Q19, passes through Q3, and is overlapped with the H.AMP (R/B) signal as the clamp pulse. This clamp pulse is modulated by the Y.BOW (B) signal and passes through the drive circuit formed by Q4. It is then output from the complementary SEPP circuit formed from the Q5 and Q6 darlington-pair to output transistors Q7 and Q8. After boosting by DCT1, the vertical envelope signal from DCT3 is clamped to the horizontal signal from DCT1 and supplied to the convergence plate (CVP-2). The H.AMP (B) signal is used for independent correction of blue misconvergence. This signal passes through R4, and is input to the DCT1 drive circuit. It is then added to the H.AMP (R/B) signal, and after insertion of the clamp pulse, is amplified and supplied to DCT1. Asymmetrical misconvergence in the

horizontal direction can be now corrected using the H/AMP (B) signal. Static assymetrical misconvergence can be corrected by moving the blue beam independently since the height of the clamp pulse is modulated by the Y.BOW (B) signal. In the same manner, the H.AMP (R/B) signal is divided by R1 and R2, and is input to the differential amplifier circuit formed by Q9 and Q10. It then passes through the Q12 drive circuit after insertion of the clamp pulse by Q11. This signal is sent from the complementary SEPP circuit, formed from the Q13 and Q14 darlington-pair, to the output transistors Q15 and Q16 where it is input to DCT2. After boosting by DCT2, the vertical envelope signal from DCT1 is supplied to the convergence plate (CVP-1). This corrects red misconvergence.

The correction voltages for horizontal static misconvergence and Y.BOW dynamic misconvergence are supplied to DCT3. The correction voltages are obtained in the following manner.

Q19 inverts the HSP pulse and sends it through Q20 and Q21 where it is modulated by the Y.BOW (R/B) signal input through R92. The amplitude modulated pulse is sent to Q22, and then to the Q23 drive circuit. It is then output from the auxiliary complementary SEPP circuit formed by Q24, Q25, Q26, and Q27. After this waveform is boosted by DCT3, it is clamped by a diode and envelope detection is performed. Next, the parabolic wave for the vertical period is extracted and the signal is overlapped with the H.AMP correction voltage obtained by DCT1 and DCT2. The signal is then applied to the convergence plates (CVP-1 and CVP-2).

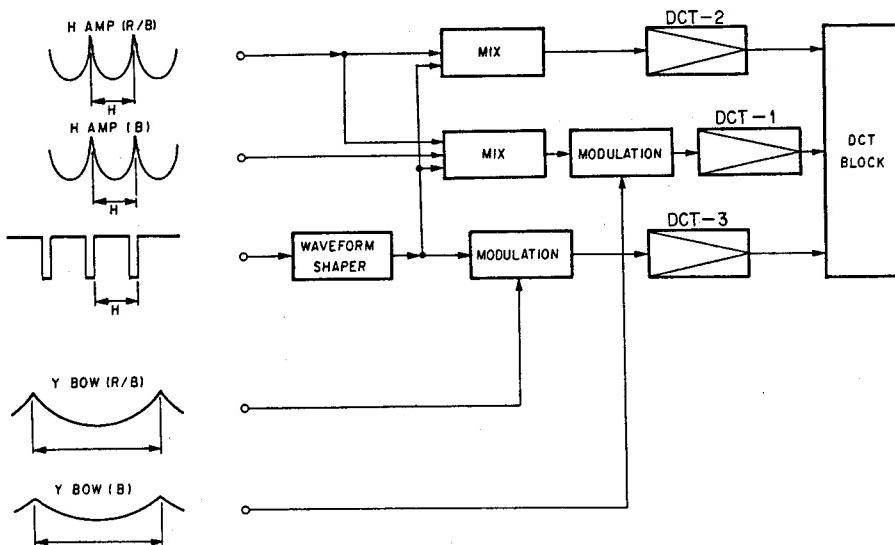


Fig. 23. Horizontal Convergence Output Circuit Block Diagram

### **3-7-2. Description of DCT Block Operation**

The principles of DCT block operation are shown in Fig. 24. The DCT block contains detection resistors for HV regulator feedback, high voltage resistors for obtaining H.STAT voltage, DCT1, 2, and 3 for convergence correction, a clamping circuit, and a detection circuit.

The H.STAT voltage is approximately 29kV, which is obtained by dividing the high voltage ( $HV=30.0\text{kV}$ ). This voltage can be varied by the H.STAT control, and correction of static misconvergence can be performed by changing the DC voltage applied to the convergence plates.

The H.STAT voltage (VA) is overlapped with the correction voltages obtained from DCT1, DCT2, and DCT3, and supplied to the convergence plates (CVP-1 and CVP-2). Correction of both static and dynamic misconvergence in the horizontal direction is possible even if it is asymmetrical. The pulse modulated by the parabolic voltage of the vertical period, shown in Fig. 24., is input to DCT3. As the CV voltage is extremely high, approximately 97% of HV, it is difficult to transmit the correction wave of the vertical period. The horizontal wave is clamped to the vertical period envelope at "VB" and the resulting waveform is shown in Fig. 25.

This is then supplied to the convergence plates.

In DCT3, this correction voltage is boosted four times. The pulse peaks are clamped by diode D3, and the vertical period correction wave is extracted by D4 and C1. The resulting waveform is shown in Fig. 25. As shown in this figure, static misconvergence correction is possible, as changing the overall height of the pulse changes the VB voltage DC level.

As shown in Fig. 24, the horizontal period correction wave with the clamp pulse inserted, is applied to DCT1 and DCT2. It is clamped by diodes D1 and D2 after being amplified approximately 100%, and is overlapped on the VB voltage. CV1 and CV2 are supplied to convergence plates CVP-1 and CVP-2 respectively. CVP-1 is a convergence electrode for correction of blue misconvergence, and CVP-2 is a convergence electrode for correction of red misconvergence. Thus, red and blue horizontal misconvergence can be corrected separately. The correction of blue misconvergence on the Y-axis is possible by changing the clamp pulse height, of the correction wave input to DCT1.

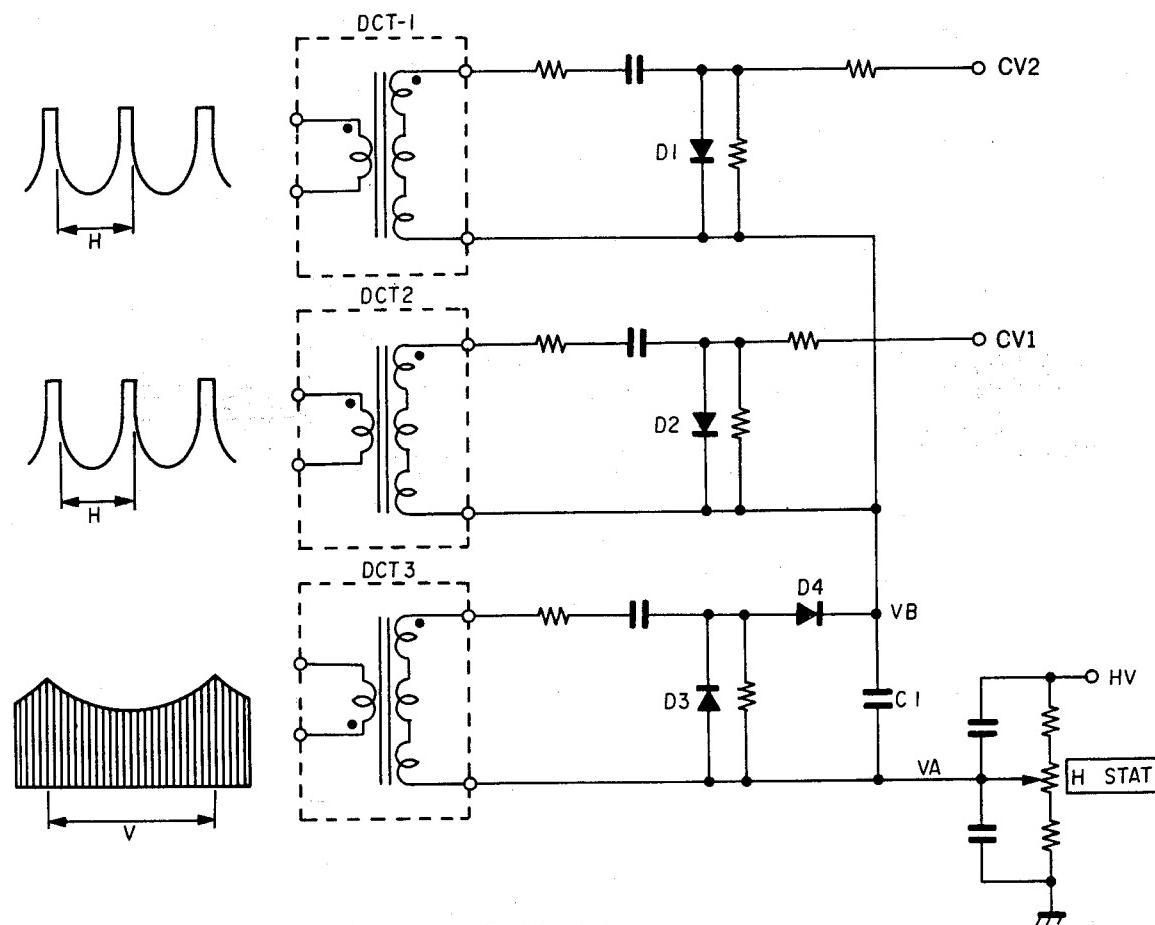


Fig. 24. DCT Block

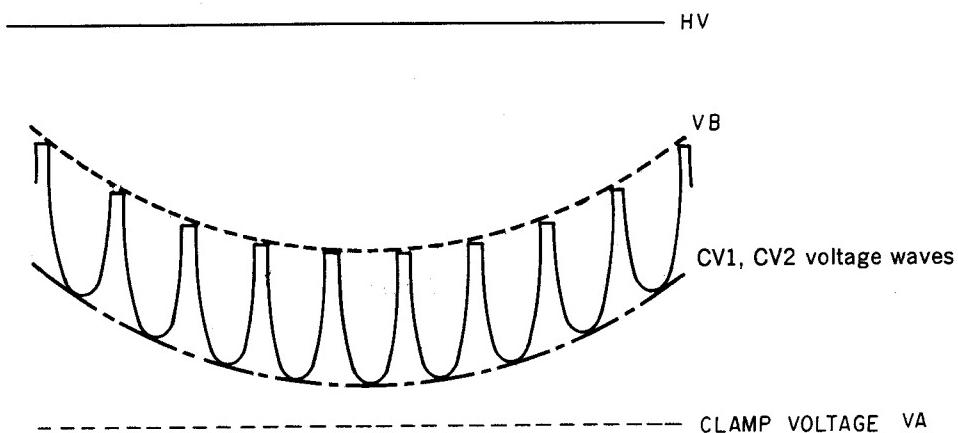
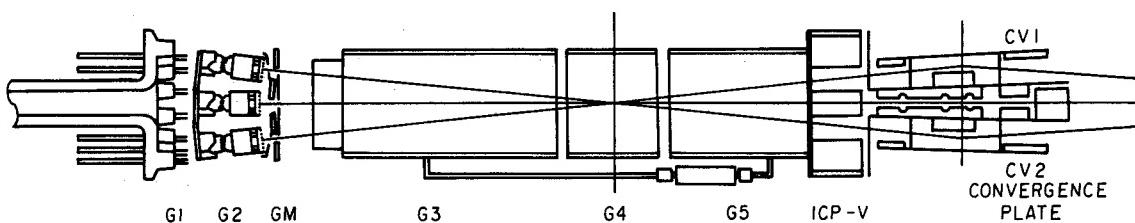


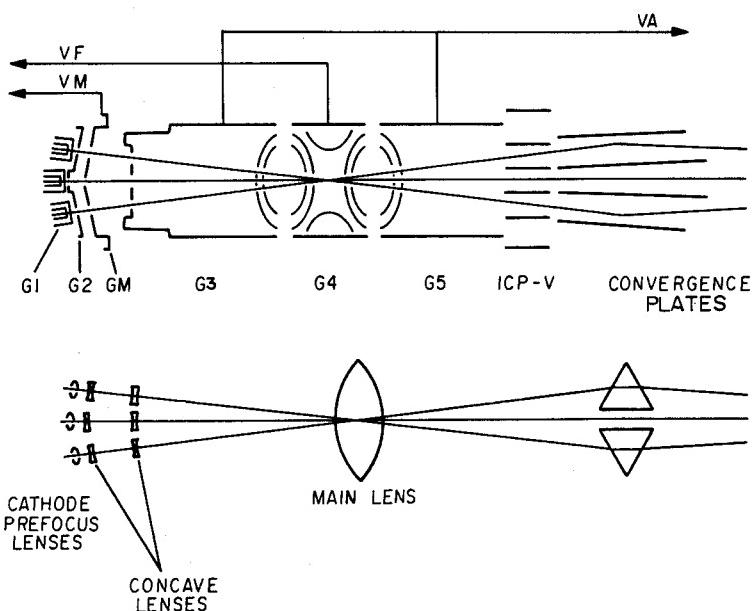
Fig. 25. CV1 and CV2 Voltage Waves

### 3-7-3. Dynamic Focus Circuit

The construction of the electron gun is shown in Fig. 26. In this gun, a GM electrode is mounted between the G2 and G3 electrodes to improve the focus of the side beams. Thus, there are pre-focus lenses before the main lens as shown in Fig. 27. This improves the focus characteristics of the side beams. A DC voltage of 10 kV is supplied to the GM electrode from the FBT. The voltage generated by the dynamic focus circuit is applied to the G4 electrode.



**Fig. 26. Construction of Electron Gun**

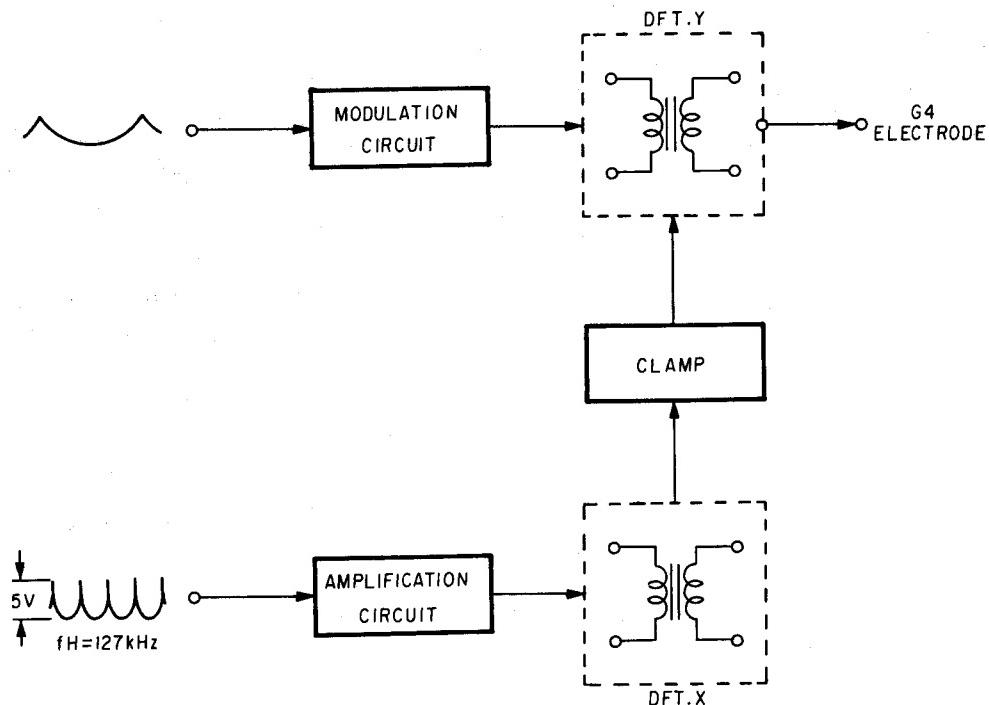


**Fig. 27. Lens System**

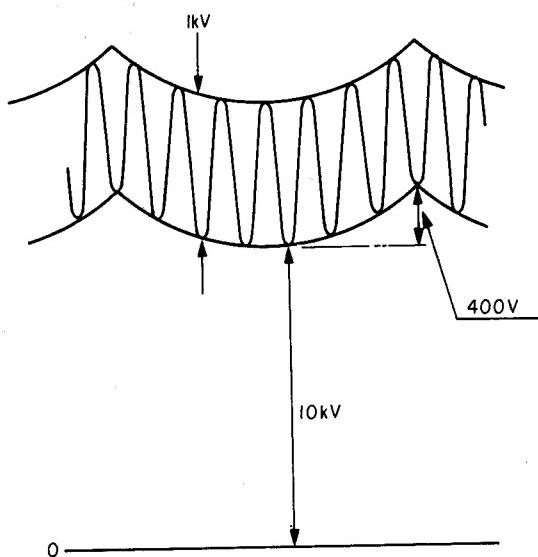
The dynamic focus circuit dynamically changes the focus voltage so that optimum focusing of the beams over the entire screen is obtained. With this monitor, adjustment of  $17 \times 17$  points on the screen is possible to allow precise adjustment of the focus points.

After the X-axis correction voltage is amplified by the DFX circuit, it is amplified by the DFT.X (Dynamic Focus Transformer X).

The Y-axis correction voltage and static G4 voltage are created by the voltage resonance converter using DFT.Y. The block diagram of the dynamic focus circuit is shown in Fig. 28., and the waveform of the dynamic focus voltage is shown in Fig. 29.



**Fig. 28. Dynamic Focus Circuit**



**Fig. 29. Dynamic Focus Voltage**

### (1) DFX Circuit

The DFX correction waveform created by the M2 board is divided by R137 and R138 on the R board, and is input to the differential amplification circuit formed by Q35 and Q36. It then passes through the Q38 drive circuit, and on to the output stage. In the output stage, output transistors Q41 and Q42 are darlington-paired to Q39 and Q40, and form an auxiliary complementary SEPP circuit.

The correction waveform obtained from the output stage is amplified by T3 DFT.X on the K board and is clamped by a diode. It is then overlapped with the T2 DFT.Y correction voltage and supplied to G4.

### (2) DFY Circuit

After the correction waveform created by the M2 board is divided by R113 and R114 on the R board, it is input to IC2 which forms the DFY modulation circuit. The DFY power supply modulation output transistor Q29 is driven by the output of IC3 (2/2), and the power supply modulation voltage is applied to T2 DFT.Y on the K board. The DFT.Y output transistor Q1, damper diode D2, and resonance capacitor C10 are connected to T2, and they form a voltage resonant type converter. The C.DRV pulse created on the E board is applied to the gate of Q1, where it drives Q1. As a result, power supply modulated voltage of approximately 10 kV is generated at T2 DFT.Y. This voltage is divided by resistors, passes through the voltage follower circuit of IC2 (2/2), and is input to the sample and hold circuit formed by Q31 and C46. As shown in Fig. 28, the divided voltage is the horizontal period parabolic voltage overlapped with the vertical period parabolic wave. The HCP pulse is applied to the gate of Q31, and sampling is performed at the center of the horizontal period. The vertical period parabolic voltage is then extracted, and this passes through the IC3 (1/2) voltage follower circuit. Feedback is supplied by the modulation circuit of IC2 (1/2).

#### 3-7-4. Double Quadrupole Correction Circuit

Because the front panel of the CRT is nearly flat, the shape of the spots will be elongated in the X and Y axis directions if double quadrupole correction is not performed.

In addition, there will be diagonal distortion at the corners, and when lines are displayed, their width will be different at various areas of the screen. For this reason, it is necessary to make the shape of the spots in the various areas as circular as possible. The double quadrupole correction circuit performs this function.

Fig. 31. shows the configuration of the coils used for double quadrupole correction, the directions of flux, and the direction of forces applied to the beams.

Coils are wound around magnet arms A and B, and force is

applied to the beam in the horizontal or vertical direction by the flux created by magnetic arm A. A diagonal force is applied to the beam by the flux created by arm B.

Fig. 32. Correction of the Beams.

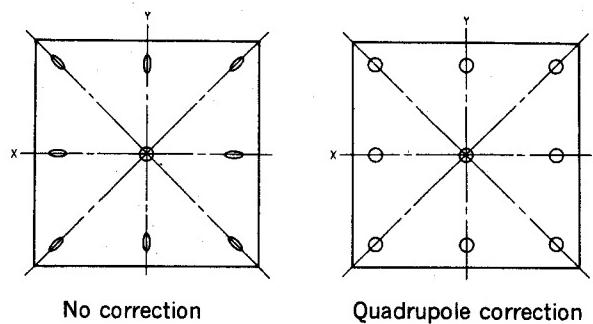


Fig. 30. Shape of Spots

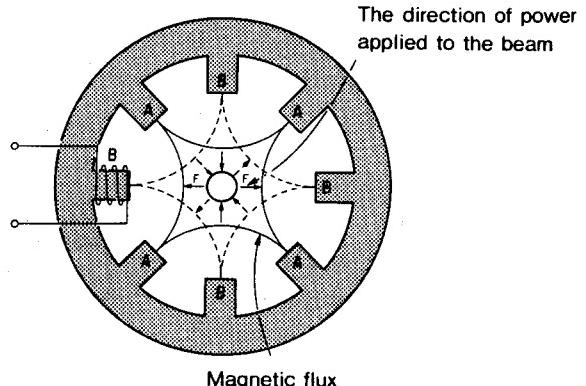


Fig. 31. Double Quadrupole Correction Coils  
 (Coils wound around the various magnet arms are omitted)

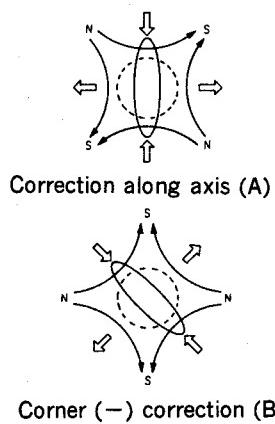


Fig. 32. Principles of Correction

**(1) DQP Correction Circuit (Diagonal Correction)**

The DQP (Diagonal Quadrupole) correction signal generated by the M2 board is divided by R164 and R165 on the R board, and is input to the differential amplification circuit formed by Q44 and Q45. The muting transistor Q43 is connected to the base of Q44. The base of Q44 is grounded until the DQP correction signal arrives. This protects the output stage transistor from overcurrent.

The amplified DQP signal passes through the drive circuit formed by Q58, and is output from the complementary SEPP circuit formed by output transistors Q48 and Q49. Q46 and Q47 are connected to output transistors Q48 and Q49 respectively in order to increase the current amplification rate. The current output from this SEPP circuit flows to the DQP coil wound around magnet arm B, and the shape of the diagonal beam is corrected until it is circular.

**(2) AQP Correction Circuit (Axial Correction)**

In the same manner as the DQP correction circuit, the AQP (Axis Quadrupole) correction signal created by the M2 board is divided by R183 and R184, and is input to the differential amplification circuit formed by Q51 and Q52. Q50 forms a muting circuit. The amplified AQP signal which passes through Q53 is output from the complementary SEPP circuit formed by Q54, Q55, Q56 and Q57. The correction current is then supplied to the AQP correction coil wound around magnet arm A. The shape of the spots elongated in the vertical or horizontal direction can now be corrected to become nearly circular.

### 3-8. S BOARD

#### 3-8-1. NTC Correction Circuit

Correction of the static misconvergence in the vertical direction caused by twisting of the electron gun, etc., is performed by the NTC (Neck Twist Coil).

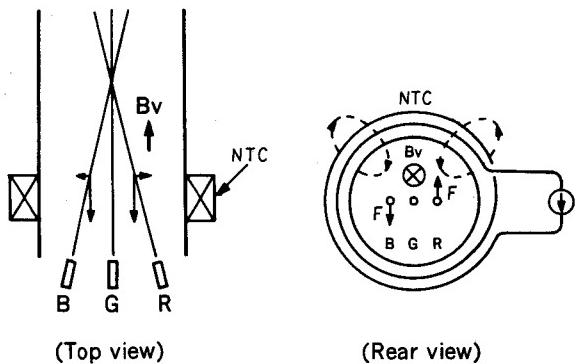


Fig. 33. Principles of NTC Correction

The principles of NTC correction are shown in Fig. 33.

The green beam, being parallel to the magnetic flux generated by the NTC, is not affected by this flux. Side beams (red and blue) however, deviate because they have an incidence angle greater than zero and their X-axis vectorial components receive the influence of the magnetic flux. Thus, by changing the NCT coil magnetic flux, it is possible to move the red and blue beams symmetrically with regard to the green beam, as shown in Fig. 33.

The NTC compensating signal is produced by the M2 board and delivered to the S board. Then it passes through R82 and it is input to the IC4 power operation amplifier. The output current of this amplifier drives the NTC to compensate for the symmetric component of vertical direction static misconvergence.

#### 3-8-2. Asymmetric Vertical Misconvergence

##### Compensation Circuit (S Board, AVMC Coil).

Compensation of the asymmetric component of vertical static misconvergence is performed by the AVMC (Asymmetric Vertical Misconvergence) compensating coil.

Compensation of this asymmetrical component is usually performed with six magnets, but this causes spot shape distortion with the resulting adverse effect on focus characteristics. To prevent this, this monitor uses an electromagnetic coil for compensation.

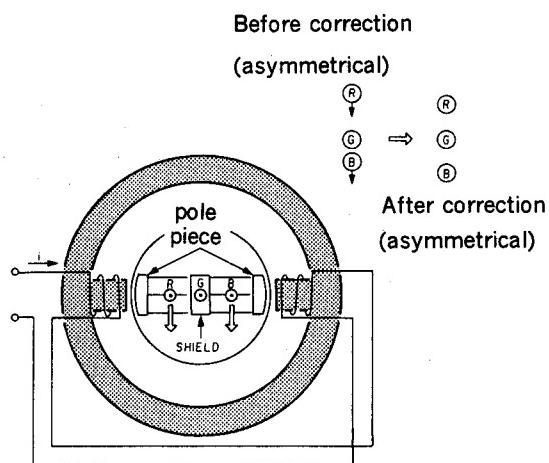


Fig. 34. AVMC Compensation Principle

As shown in Fig. 34, this electromagnetic coil has windings on the two-round-pole ring core legs, connected in series. It is equipped with a pole piece to provide a uniform horizontal magnetic field to the side beams between the electron gun G5 and the convergence plate. It also has shielding to prevent the center beam from being affected by this horizontal field. When current flows into the AVMC coil, the side beams receive a force in the vertical direction so that compensation can be carried out resulting in the red and blue beams being at the same distance from the green beam, as shown in Fig. 35. In this way the asymmetrical component of vertical direction static misconvergence can be compensated by supplying DC current to the AVMC coil. Compensation of the Y-axis asymmetrical component is also possible by applying the vertical period compensation current to the AVMC coil. The AVMC compensation circuit is located on the S board. The compensation signal generated at the M2 board is divided by R67 and R155, then delivered to the AVMC coil. This coil has the compensation current from the IC6 power operation amplifier applied to its neck for asymmetrical component compensation. After the red and blue beams are located at the same distance from the green beam, they can be aligned with the green beam by the NTC (Neck Twist Coil).

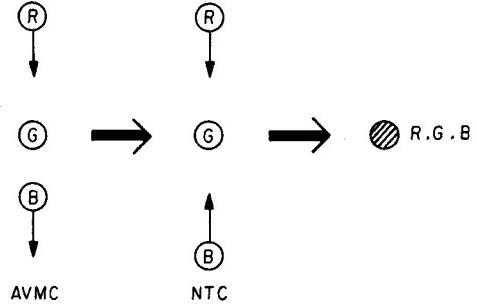


Fig. 35.

### 3-9. B BOARD

#### 3-9-1. Functions of B Board

The B board consists of ① signal generator, ② SYNC input circuit, ③D/A converter section (including G1 DC AMP), ④ blanking pulse generator and ⑤ clamp/reference pulse generator.

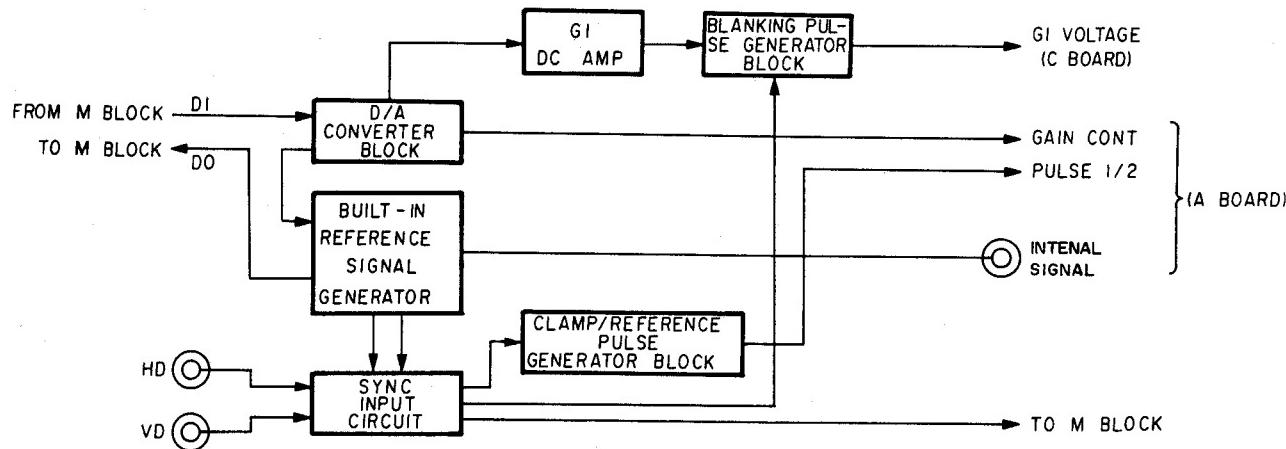


Fig. 38.

#### 3-9-2. Interface with M block

The signals necessary for control of the video system are supplied from the M block as digital data. There is an 8-channel, 8-bit DAC in the D/A converter section. There are also 24-bit latches in the signal generator section. The signals supplied from the M board to these interface ICs are in the form of 36-bit serial data as shown in Fig. 39.

Data for checking data transfer is output from DO 36 clock cycles after being input to the shift register. The assignment of each bit is shown on the next page.

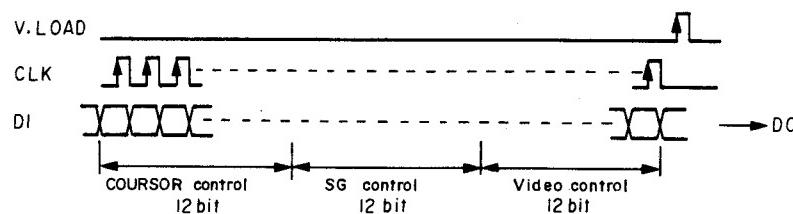


Fig. 39.

### 3-8-3. Vertical Direction Dynamic Misconvergence Compensation Circuit

There are three main types of vertical dynamic misconvergence: Corner cross vertical misconvergence (CCV), X-axis cross vertical misconvergence (XCV), and asymmetric components at the corners (corner VCR or Vertical Center Raster), as shown in Fig. 36. These are compensated for by the convergence yoke (CY) shown in Fig. 37.

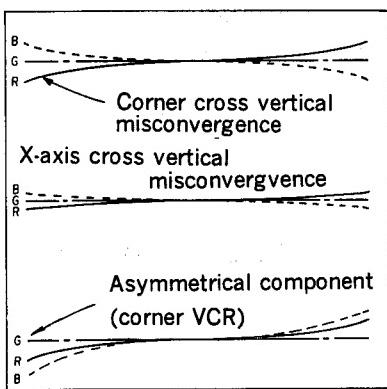


Fig. 36. Vertical Dynamic Misconvergence

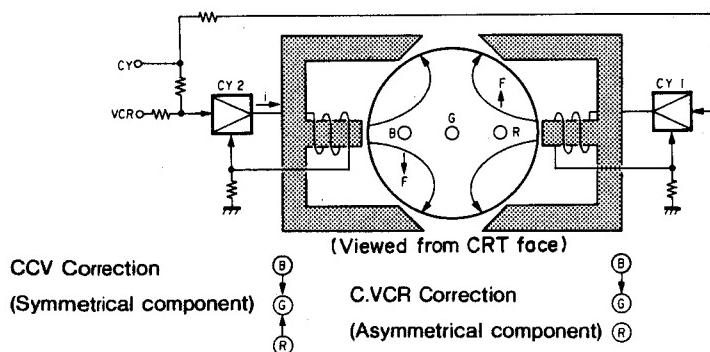


Fig. 37. Convergence Yoke Compensation Principle

The CY has a coil wound around the center leg of the E-type core. Compensation is performed by making a horizontal-period current flow into this coil. Thus applying an horizontal magnetic field to the side beams and moving the beams. CY1, which performs red beam compensation, and CY2, for blue beam compensation, are driven independently.

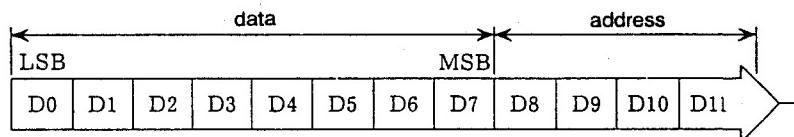
Corner vertical misconvergence and X-axis cross vertical misconvergence compensations are performed by the CY OUT compensation waveform generated by the M2 board. After being divided by R52 and R53 on the S board, the CY OUT signal passes through R6 and R33, and is then input to the CY circuit. After passing through R6, the CY OUT signal is input to the differential amplifier circuit composed of Q3 and Q4. The resulting output passes through the Q5 drive circuit, and then it is output from the complementary SEPP circuit composed of the Q8 and Q9 output transistors. This current is delivered to CY1 and the red beam is compensated. In the same way, the CY OUT signal input through R33 passes through the differential amplifier circuit composed of Q12 and Q13, and through the Q14 drive circuit. Then it is output from the Q17 and Q18 output transistors and this current is delivered to CY2. Compensation is performed so that blue and red beams move in opposite directions. This allows the red and blue beams to be aligned with the green beam as shown in Fig. 37.

The C VCR compensation signal generated at the M2 board is input to the CY2 drive circuit through R55, allowing for corner VCR component compensation by independently correcting the blue beam as shown in Fig. 37.

### Video System Protocol

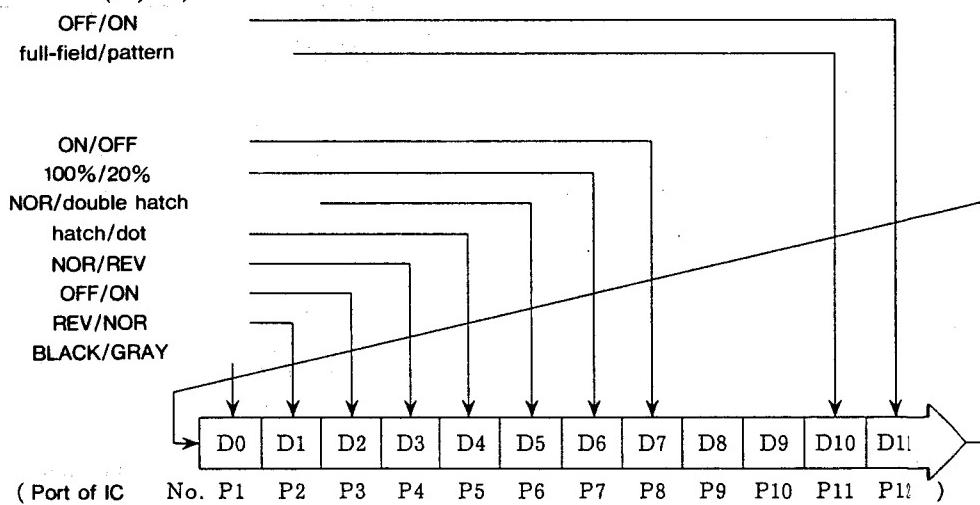
#### ① Video control

A01	RC	Rch	GAIN	0 0 0 1
A02	GC	Gch	GAIN	0 0 1 0
A03	BC	Bch	GAIN	0 0 1 1
A04	RB	Rch	G1	0 1 0 0
A05	GB	Gch	G1	0 1 0 1
A06	BB	Bch	G1	0 1 1 0
A07	N.C	N.C		0 1 1 1
A08	DATA	LED	ON/OFF	1 0 0 0



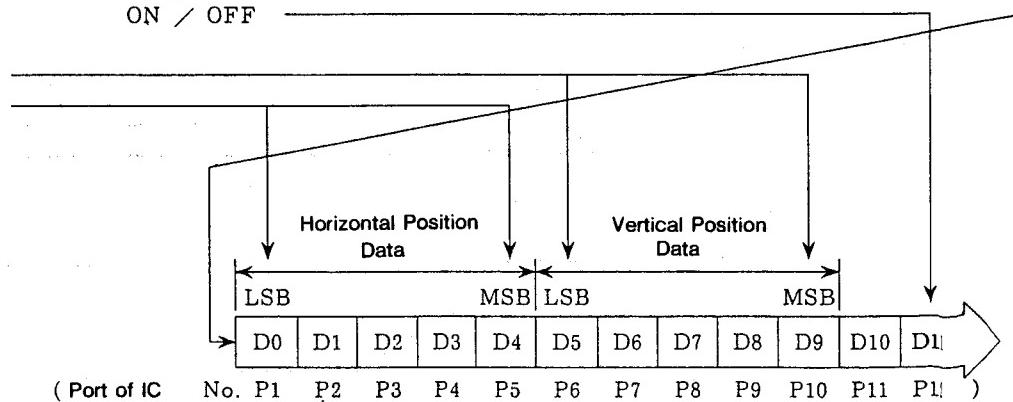
#### ② SG. Cursor control

D11	SG	(0 / 1)
D10	pattern cut-over	OFF/ON
D9	N.C	full-field/pattern
D8	N.C	
D7	H.BLK	ON/OFF
D6	video level	100%/20%
D5	pattern cut-over2	NOR/double hatch
D4	pattern cut-over3	hatch/dot
D3	pattern cut-over4	NOR/REV
D2	cursor	OFF/ON
D1	cursor mode	REV/NOR
D0	cursor level	BLACK/GRAY



#### ③ Cursor Position

D11	cursor blinking	(0 / 1)
D10	NC	ON / OFF
D9~5	V position	
D4~0	H position	



### 3-9-3. Video System Control Section

#### (1) D/A Converter Section/G1 DC AMP Section

This section generates the R/G/B video amplifier gain voltage of 0-5V, and also the G1 cutoff voltage (-40 to 0V). The data for control is sent to D/A converter IC24 from the M block together with the respective data addresses. The voltage for setting the gain of the RGB video amplifiers is output from A01 through 3 respectively, and is output by an operational amplifier through buffer IC27 (2/2), IC27 (1/2), and IC26 (1/2). The reference voltage for the D/A converter is created by the D1 Zener, and is input to IC24.

It is necessary to amplify the 0 to 5V voltage output from the D/A converter to -40V to 0V. For the R channel, the D/A converter output is amplified by the DC amplifier formed by operational amplifier IC25(1/2) and Q9. Q9 is base grounded, and feedback is supplied to the operational amplifier from the Q9 collector through R55. The gain and DC bias of this amplifier is determined by R52, R54, and R55.

#### (2) SYNC Input Circuit

The block diagram is shown below.

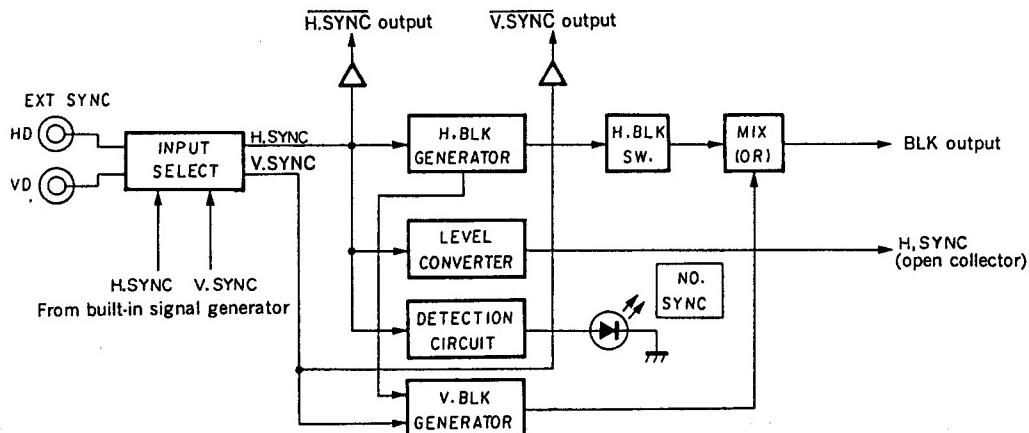


Fig. 40.

#### Input Switching Circuit

After the sync signals input from HD and VD are terminated by R8 and R7 ( $75\Omega$ ), selection of SYNC from the built-in signal generator is performed by IC29. The selected SYNC is output to the M block as H.SYNC, V.SYNC, and is also connected to the next stage. V.SYNC is not used, but is the trigger for V.BLK generation.

#### H.BLK Generation Section

The IC31 (1/2) one-shot multivibrator operates with the falling edge of H.SYNC as the trigger. The pulse generated at this time becomes the H.BLK pulse. The pulse width is determined by C7, R11, and RV1, and the relationship with the signal is shown below.

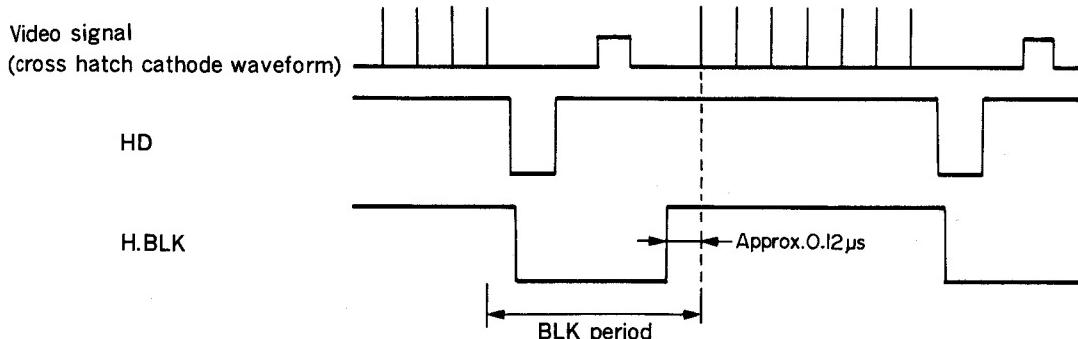


Fig. 41.

### Level Conversion Section

Level conversion is performed by Q3 as the clamp/reference pulse generation section input uses a CMOS operating at approximately 10V.

### H.SYNC Detection Circuit

The presence of H. SYNC is confirmed to make sure that SYNC is being properly input. While IC31 (2/2), a resettable one-shot multivibrator, is being triggered by continuous H. SYNC pulses,  $2\bar{Q}$  is low and the LED is not illuminated. If H. SYNC is no longer input or V SYNC is connected by mistake,  $2\bar{Q}$  goes to high, and D7 is illuminated. However, this NO SYNC information is not output as FAIL information.

### H.BLK SW

It is necessary to block H.BLK when the raster centering is adjusted. H. BLK is turned OFF by turning OFF the IC32 (4/4) gate. The V.BLK operation is not stopped at this time.

### V.BLK Generation Section

The V.BLK pulse 58 horizontal periods from the falling edge of V.SYNC is generated by using the synchronous down counter IC30 to count the H.SYNC with V.SYNC as the trigger.  $\bar{CO}$  of IC30 pin ⑭ is "Low" during the V. active period, CK is always "High", and the counter does not operate.

When V.SYNC is input and  $\bar{APE}$  goes to "Low", 56 (decimal) set in data input PI0 through 7 is loaded, and  $\bar{CO}$  goes to "High". This causes the H.BLK pulse from pin ⑬ 1Q of IC31 (1/2) to pass through IC28 (4/4) and to be applied to CK. However, there is no count down during the 3H period when V.SYNC is "Low"; counting starts from 4H.  $\bar{CO}$  goes to "Low" when the count reaches 0, and the count stops. The same operation is performed again when the next V.SYNC pulse is input.

The following is the timing chart for the various sections. This allows for a V.BLK pulse with a length of  $58H + 1H$ . BLK to be obtained from  $\bar{CO}$ .

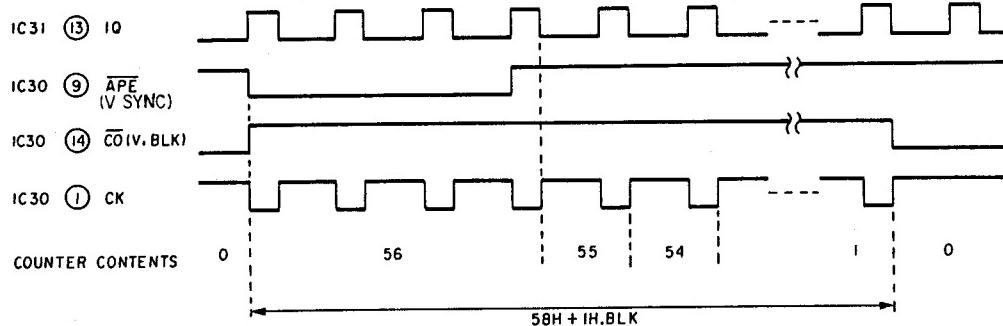


Fig. 42.

### MIX(OR) Section

The H. BLK and V. BLK pulses obtained in the above manner are mixed by IC28 (2/4), and connected to the BLK pulse amplifier as BLK output.

### (3) Blanking Pulse Generator

A blanking pulse of approximately 40 Vp-p can be obtained by switching Q13. This passes through the Q10 buffer and is mixed with the output of the G1 amplifier described in 3-9. 3(1). For example, in the R channel, the blanking pulse D.C. level passes through R35, D4, and R68 from the 75V line during the active period, is connected to the G1 amplifier output, and the output voltage is roughly the same as the G1 amplifier output due to the voltage division ratio. D4 is off and this pulse is output while a low impedance of 40 Vp-p negative pulse is applied to the anode of D4 during the BLK period.

### (4) Clamp/Reference Pulse Generator Section

The H.SYNC pulse is delayed slightly by R20 and C15, and triggers the IC33 (1/2) one-shot multivibrator. This output passes through the Q5 and Q6 totem pole buffer, and is output as a clamp pulse (PUL 1). The IC33 (2/2) one-shot multivibrator is triggered by the falling edge of this pulse, and the reference pulse (PUL 2) is output in the same manner.

IC33 operates by the shunt regulator power supply formed by Q4, and this voltage is controlled by the temperature compensating circuit formed by thermistor TH-1. The amplitude of the output pulse changes when this voltage changes and the gain of the video amplifier changes. This circuit changes the pulse amplitude according to temperature to provide compensation for the video amplifier temperature-gain characteristics.

### 3-9-4. Internal Test Pattern Generator

(DDM-2801C ; Ser No. up-to 2,000,043)

(DDM-2801C2 ; Ser No. up-to 2,000,049)

(DDM-2802C ; Ser No. up-to 2,000,020)

(DDM-2802C2 ; Ser No. up-to 2,000,012)

The block diagram is shown in Fig. 43. The following is a description of each of the blocks.

#### (1) SG Control Latch Section/Cursor Control Latch Section

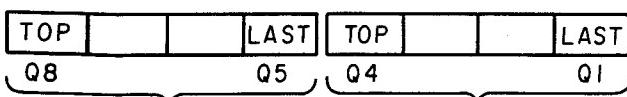
SG control and the type of cursor is selected by the 12-bit SG control latch. The cursor position is determined by the cursor control latch. Refer to section 3-9-2 for details on allocation. In Addition, SW1 is used to select what will be displayed on the screen. Setting SW1 to "HATCH" or "WHITE" will display either a cross hatch or all white test pattern. Setting SW1 to "NORMAL" allow use of the monitor's internal SG or an external SG. SW1 is usually set to "NORMAL".

#### (2) CLK Oscillation Section

This signal generator operates with a clock rate of approximately 44MHz, 1/8 of the pixel clock frequency. There is 3rd overtone oscillation by IC2 (1/4). The clock is stopped in the SG OFF mode by setting input 1 to "L" by obtaining the NAND output of IC2.

#### (3) H Counter/H Pattern Memory/Pattern Generation/Blanking Generation/Reset Generation Section

The clock is counted by the 9-bit sync counter formed by IC9, IC7, and IC12. The upper 7 bits are connected to the addresses of IC5 (Horizontal pattern memory). 8-bit data is output once every 4 clock cycles. Of the 8 bits, the pattern information is written in the upper 4 bits and the blanking area information in the lower 4 bits. These 4 bits of data are loaded into the shift registers of IC3 and IC1 once every 4 clock cycles, and pattern generation and blanking generation is obtained by having this data shifted out as the clock signal triggers these shift registers. Each address consists of the following data.



PATTERN H.SYNC : 0      BLANKING AREA : 0  
 BLACK : 1      ACTIVE AREA : 1

The H.SYNC information is mixed with the pattern information. The blanking information is used to separate H. SYNC information from pattern information. The falling edge of the H. SYNC is used for the counter reset timing. For this reason, the SYNC width is wider than the actual width due to the relationship with the cursor address. This poses no

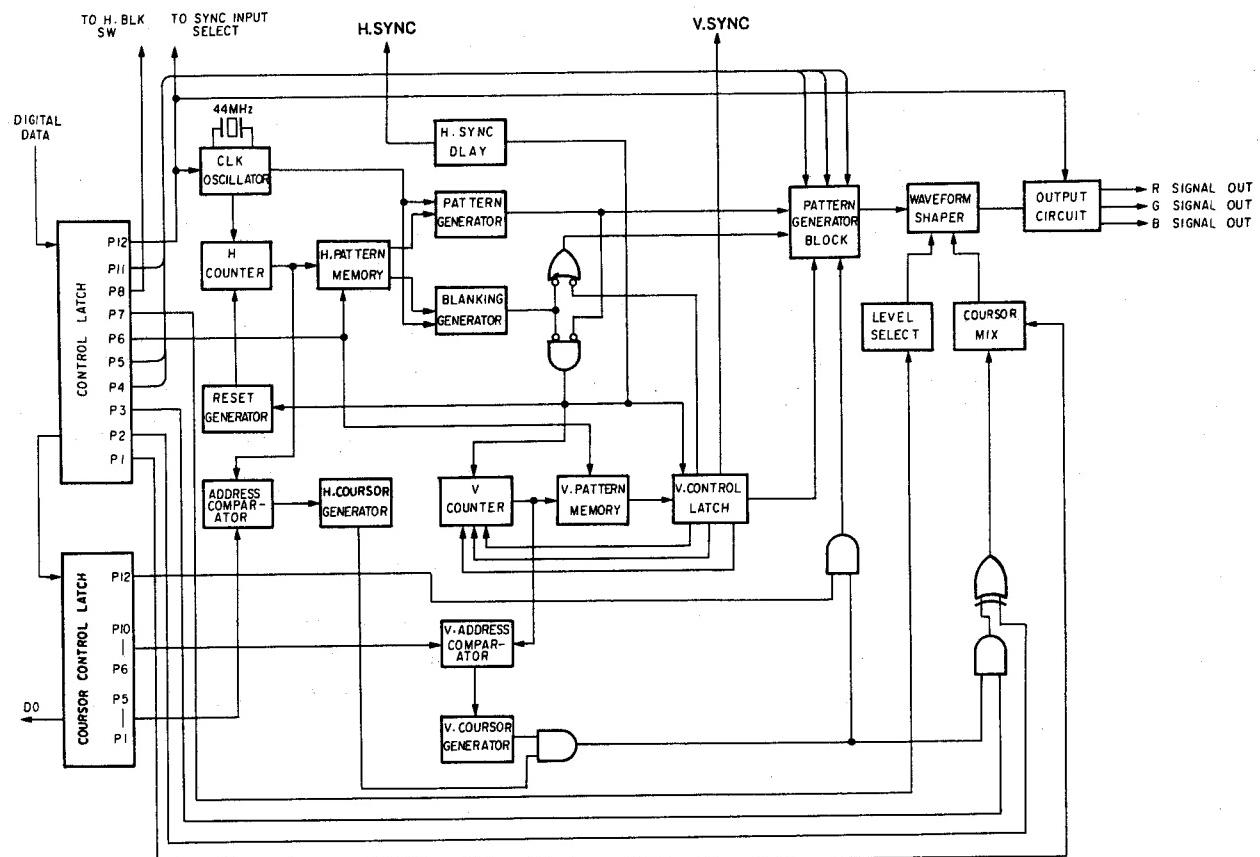
problem as the SYNC trigger is applied at the falling edge. The timing chart for counter clear pulse generation is described in Fig. 44.

The contents output from the memory are switched by switching the MSB of the IC5 memory address using pin ⑥ of IC14. There is also a normal cross hatch (or dot) or double cross hatch (or double dot) selection.

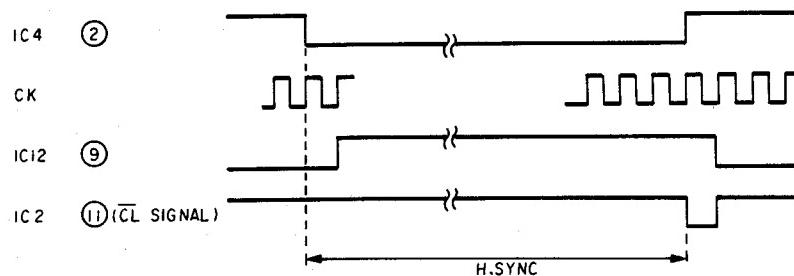
#### (4) V Counter/V Pattern Memory/V Control Latch Section

A 12-bit asynchronous counter is formed by IC15 (1/2), IC18 (1/2), and IC18 (2/2). However, resetting of the lower 4-bit counter of IC18 (2/2) and the upper 8-bit counter are performed independently by memory output. The carry to the upper 8 bits is also by memory output. This is because it is necessary to forcibly reset the counter by memory output and to increment the upper counter in order to properly display the cursor in 17 places. Fig. 45 shows the counter and data output timing.

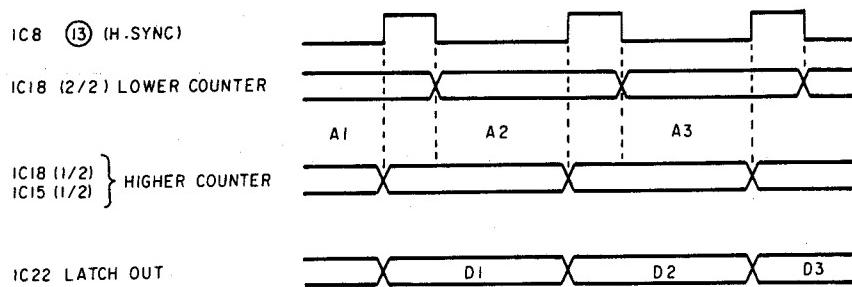
The contents output from the memory are switched by switching the MSB of the IC23 memory address using pin ⑥ of IC14. There is also a normal cross hatch (or dot) or double cross hatch (or double dot) selection.



**Fig. 43.**



**Fig. 44.**

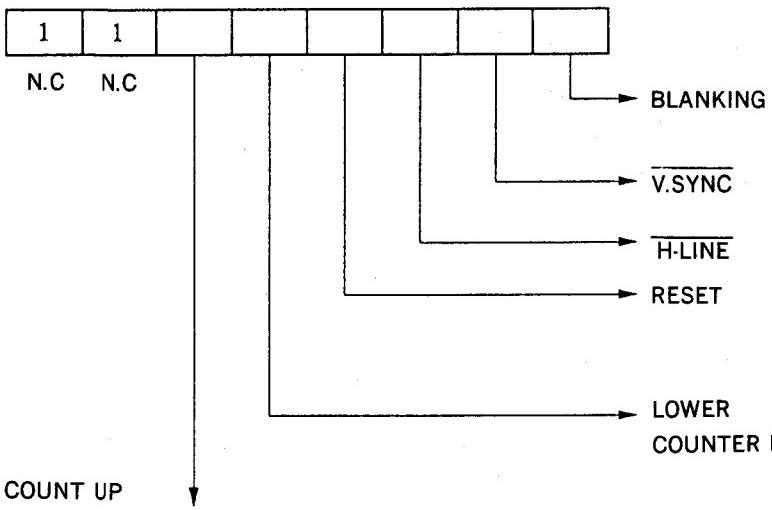


**Fig. 45.**

# DDM-2801C/2802C

## DDM-2801C2/2802C2

Each bit of memory is assigned as follows:



**COUNT UP**  
When changing 1→0, the upper address is counted up.  
When changing 0→1, the cursor generator counter IC20 is counted up.

### (5) Cursor Address Generator

IC16 evaluates whether the screen location currently being traced is the address designated for cursor indication. The output of the cursor position latch, IC19 port 1-5, is compared with the counter output, and "Low" is output from pin ⑩ if they match. A pulse in the horizontal direction for the cursor, whose size is designated by the IC13 counter, is generated with the "Low" signal as a trigger. The cursor size is set so that it is a cross hatch pattern (17 lines in vertical and horizontal direction) with a 128 pixel pitch, and the clock is used every 16 pixels or 16 lines to output a cursor that lasts for 14 clock cycles. When both H and V match the designated address, a cursor pulse for the H and V directions outputs from pin ⑦ of IC13 and IC20 respectively. These two pulses are anoded and the resulting signal increases the video output level at the designated address, and decreases the video output at all other addresses. This causes a cursor to appear on the screen.

In the H direction, the cursor may not necessarily appear exactly 16 pixels to the left or right of the vertical line as shown in Fig. 46 due to variations in the gate propagation time.

**BLANKING LINE :** 0  
**ACTIVE LINE :** 1  
**V-SYNC section :** 0  
**H-LINE section :** 0  
Setting this bit to 1 causes the next data output to be the data for address 000 (H).

**COUNTER RESET** Setting this bit to 1 causes the next data output to be the data for address XX0 (H).

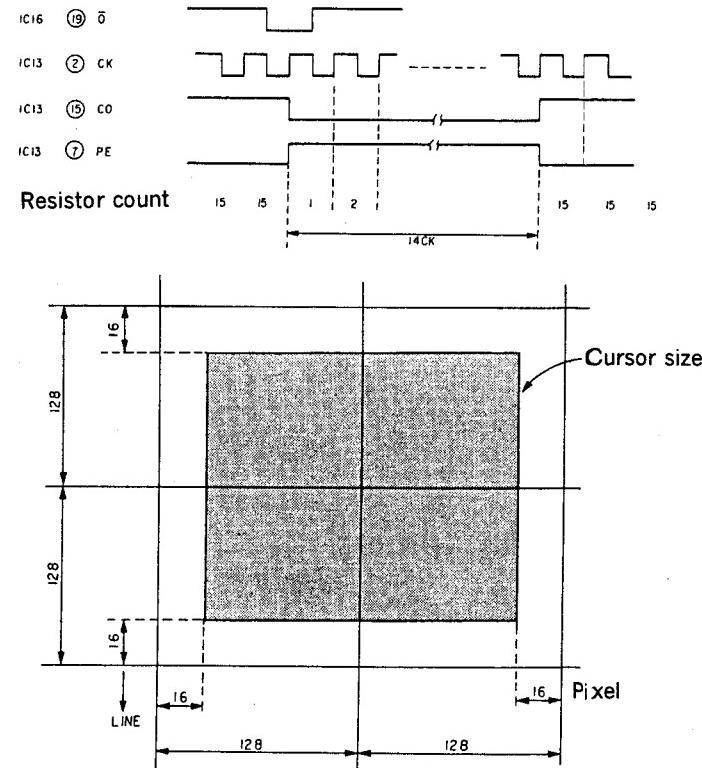


Fig. 46.

## **(6) Pattern Generator Block**

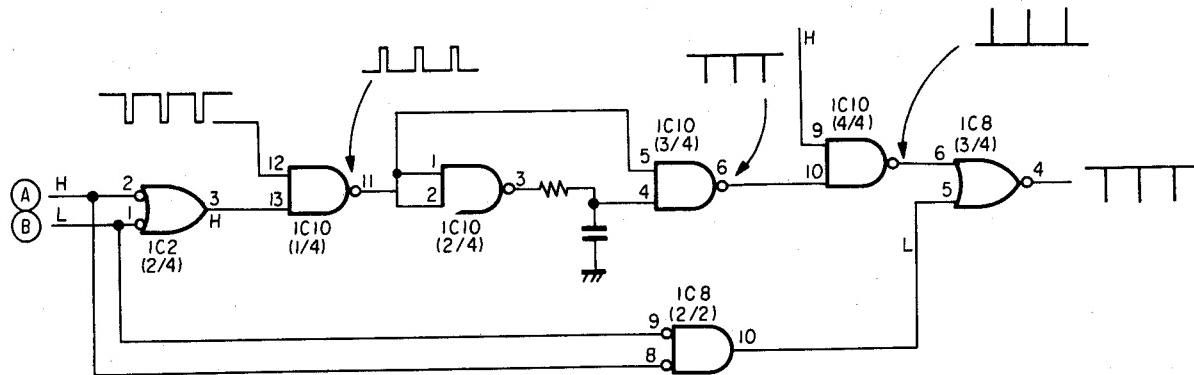
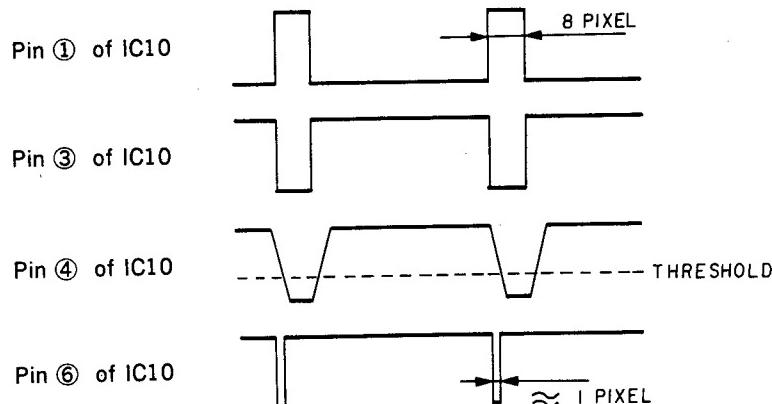


Fig. 47.

An 8-pixel-wide pulse is input to pin ⑫ of IC10 from pin ⑫ of IC3 at 128-pixel intervals. IC10 2/4 and 3/4 convert the 8-pixel-wide pulse to a width of approximately 1 pixel.



**Fig. 48.**

In this way, an approx. 1-pixel-wide pulse is output from pin ④ of IC8 at 128-pixel intervals. This allows for displaying vertical lines on the screen.

During crosshatch pattern operation, a low-level signal is input to ④ (see Fig. 47.) according to data written into the IC23 memory. The level at pin ⑩ of IC8 becomes high, and the output level low. This process is carried out at 128-line intervals.

During dot pattern generation, ⑧ is set high and pin ③ of IC2 becomes low. Thus, the output is always high. As in the crosshatch operation above, a low signal is input to ④ only for lines requiring dot display. Pin ③ of IC2 becomes high, pin ⑩ of IC8 becomes low, and 1-pixel pulse is output at 128-pixel intervals.

A full white pattern is obtained by setting pin ⑨ of IC10 low, which causes the output to become low.

The cursor is displayed by IC11(4/4) and mixes the cursor and

inverse information and sends the result to IC11(1/4) which mixes the pattern and inverse information. Finally, the blanking section is masked by IC8 (4/4) and the signal is input to the analog processing circuit in the next stage.

As for horizontal and vertical patterns, both the normal crosshatch version (17 vertical lines, 17 horizontal lines) and the double crosshatch version composed of 2-line (3-lines in the center) groups at 16-pixel intervals are written into the memory. They are selected by switching the uppermost memory address, which is done by the latch output.

**(7) Waveform Shaping/Cursor Mix/Level Switching Block**

At the normal 100% output level, Q25 is turned on by the latch output and the output level is determined by R104, R105 and RV3. This current is divided by Q17 and Q18 for cursor contrast modulation. Then it is switched by Q15 and Q16 for waveform shaping and it is converted to voltage by the load resistor R91.

When the output level is switched, Q25, which is controlled by the latch output, goes off. R106 and RV4, connected in series, restrict current further and lowers it to 20% of the original level. The following is an explanation of cursor display operation. When the cursor is not displayed, Q26 and Q23 are off, Q17 is on, and Q18 is off. All current passes through Q17, so the video signal is output at 100% of the set value. When the cursor is on and the normal mode is selected, Q23 and Q18 are turned on, while Q17 cuts off the whole screen except the cursor. In this condition, the screen is black except for the cursor, which is white. The cursor will be represented by a “+” if the crosshatch pattern is selected, and a “□” if all the white pattern is selected. To set the whole screen to an appropriate brightness except for the cursor, Q26 and Q23 are turned on. Q17/Q18 current flow ratio becomes approximately 7 : 3. This results in the background being displayed at 70% brightness and the cursor being displayed at 100%.

The Q17 collector current is switched by the Q15 and Q16 differential pair transistors according to the video pattern signal from the pattern generation block. The video signal is then output from the Q16 collector and sent to Q19.

In order to prevent black level variation due to cursor display, the Q18 collector current is sent to R91. Operation in this area is performed at +4V, obtained from the Q14 ripple filter, thus minimizing screen noise.

**(8) Output Circuit**

Since the built-in signal generator is OFF under normal operating conditions, the clock pulse is not generated, and external HD and VD are selected for sync switching. At the output circuit, Q24 is off, and the  $-3.5V_{DC}$  bias applied by R114 and R118 is delivered to video boards through drive transistors Q20, Q21, and Q22. The internal circuit is then cut off, and the external video signal is received. When the built-in signal generator is turned on, Q24 and D12 go on. The video signal biased at approximately  $2V_{DC}$  is delivered to the video boards, which switch to internal signal use. At this time, taking the Red channel as an example, a 10mA bias current passes through the drive resistor R121, and on to the video boards. This allows for proper circuit operation, including bias current.

### 3-9-5. Internal Test Pattern Generator

(DDM-2801C ; Ser No. 2,000,044 and higher)

(DDM-2801C2 ; Ser No. 2,000,050 and higher)

(DDM-2802C ; Ser No. 2,000,021 and higher)

(DDM-2802C2 ; Ser No. 2,000,013 and higher)

The block diagram is shown in Fig. 49

#### (1) TEST PATTERN GATE ARRAY (CXD2007S)

All signals required for the test pattern generator are generated by this gate array (IC1). The gate array contains a 24-bit shift register. Digital data (refer to section 3-9-2 for a detailed explanation of this data) is used to control the output of IC1. The data is input at DI, shifted by the CLK signal, and then latched by the LD signal. Latching the data outputs the signals needed to generate the pattern, cursor, and H/V sync. The following three signals are used to generate the pattern and the cursor. SG OUT outputs a signal to the PULSE GENERATOR block where the rising edge of the signal is used to generate a single pixel. This sequence is only initiated when a single pixel is to be displayed, as is the case with the dot patterns and also with the vertical lines of the cross hatch patterns. PIXEL becomes "low" when a horizontal line is to be displayed, as is the case with the cross hatch pattern's horizontal lines and also with the all-white pattern. The output of INV is used to invert the test pattern and cursor signals (SG OUT and PIXEL).

CURS outputs a signal that is used to display the cursor. This signal is triggered according to the cursor's on-screen position. Depending on the type of cursor to be displayed, this signal switches between logical negative and positive. The output of INV can also be inverted depending on the type of cursor. The first type of cursor is used to display the adjustment position when adjusting convergence or focus. The second type of cursor is displayed to indicate that the adjustment data has reached its maximum or minimum value. The outputs of Q0 (pin 7) and Q6 (pin 8) are explained in part (7). Of the remaining pins, HB 0-5, HF 0-2, HP 0-2, VB 0-5 and VP 0-2 are all set to Sony standard timing.

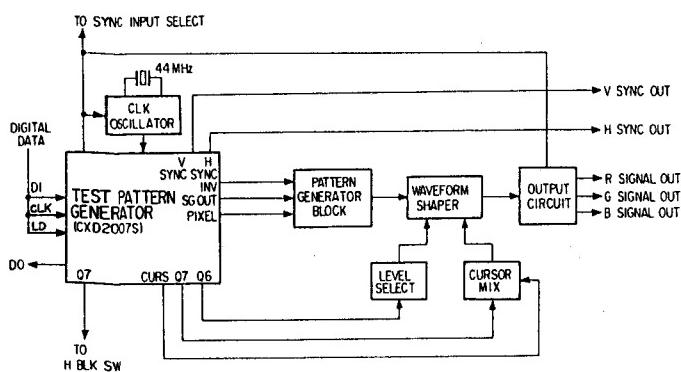


Fig. 49.

#### (2) CLK OSCILLATOR

IC1 uses as a clock frequency of 1/8 of the pixel clock, approximately 44MHz. IC2 (4/4) causes the crystal's 3rd-overtone oscillation, which results in the 44Mhz frequency. When IC1 is in SG OFF mode the clock is stopped by inputting a "low" signal to IC2 (4/4).

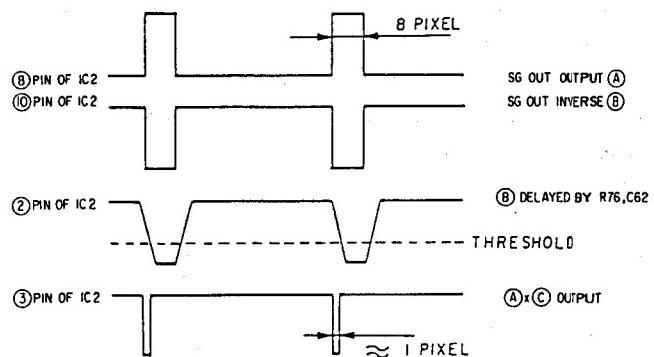


Fig. 50.

#### (3) PATTERN GENERATOR BLOCK

A pulse 8 pixels wide is output at 128 pixel intervals from pin 19 of IC1. This is input to pin 8 of IC2 (1/4). This 8-pixel wide pulse is changed to a width of approximately 1 pixel by IC2 (1/4) and (2/4). The principle is shown in Fig. 48. This 1 pixel pulse is input to IC11 (2/4). INV is also input to IC11 (2/4). Depending upon whether INV is positive or negative the pattern and cursor will be inverted. Finally the blanked section of the pattern is masked by IC2 (3/4) and the signal passed on to the analog processing circuit in the subsequent stage. This Pattern Generator block can generate two cross-hatch patterns: the normal 17 vertical, 17 horizontal line pattern, or the double-crosshatch pattern with double horizontal and vertical lines (triple lines in the center) at 16 pixel intervals.

**(4) Waveform Shaping/Cursor Mix/Level Switching Block**

At the normal 100% output level, pin⑧ "Q6" of IC1 is low, Q27 is turned off, Q25 is turned on, and the output level is determined by R104, R105 and RV3. This current is divided by Q17 and Q18 for cursor contrast modulation. Then it is switched by Q15 and Q16 for waveform shaping and it is converted to voltage by the load resistor R91.

When the output level is switched, Q25 goes off. R106 and RV4, connected in series, restrict current further and lowers it to 20% of the original level. The following is an explanation of cursor display operation. When the cursor is not displayed, Q26 and Q23 are off, Q17 is on, and Q18 is off. All current passes through Q17, so the video signal is output at 100% of the set value. When the cursor is ON and the normal mode is selected, pin⑦ (CURS) of IC1 is High for the whole screen except for the cursor. Then Q23 and Q18 are turned on, while Q17 cuts off. In this condition, the screen is black except for the cursor, which is white. The cursor will be represented by a "+" if the crosshatch pattern is selected, and a "□" if all the white pattern is selected. To set the whole screen to an appropriate brightness except for the cursor, pin⑦ (Q $\phi$ ) of IC1 becomes high and Q26 is turned on. Q17/Q18 current flow ratio becomes approximately 7 : 3. This results in the background being displayed at 70% brightness, and the cursor being displayed at 100%.

The Q17 collector current is switched by the Q15 and Q16 differential pair transistors according to the video pattern signal from the pattern generation block. The video signal is then output from the Q16 collector and sent to Q19.

In order to prevent black level variation due to cursor display, the Q18 collector current is sent to R91. Operation in this area is performed at +4V, obtained from the Q14 ripple filter, thus minimizing screen noise.

**(5) Output Circuit**

Since the built-in signal generator is OFF under normal operating conditions, the clock pulse is not generated, and external HD and VD are selected for sync switching. At the output circuit, Q24 is off, and the -3.5V<sub>DC</sub> bias applied by R114 and R118 is delivered to video boards through drive transistors Q20, Q21, and Q22. The internal circuit is then cut off, and the external video signal is received. When the built-in signal generator is turned on, Q24 and D12 go on. The video signal biased at approximately 2V<sub>DC</sub> is delivered to the video boards, which switch to internal signal use. At this time, taking the Red channel as an example, a 10mA bias current passes through the drive resistor R121, and on to the video boards. This allows for proper circuit operation, including bias current.

### 3-10. A BOARD

#### 3-10-1. Outline of A Board Functions

The A board contains 1-channel's video circuits from the video signal input to the cathode drive. Three of these boards are used to drive the R, G and B channels respectively. Each board is composed of a gain control block for contrast con-

trol, a preamplifier, a cathode drive amplifier, control circuits for controlling these amplifiers (clamp circuit, etc.) and a failure detection circuit for detecting circuit misoperation.

Block Diagram

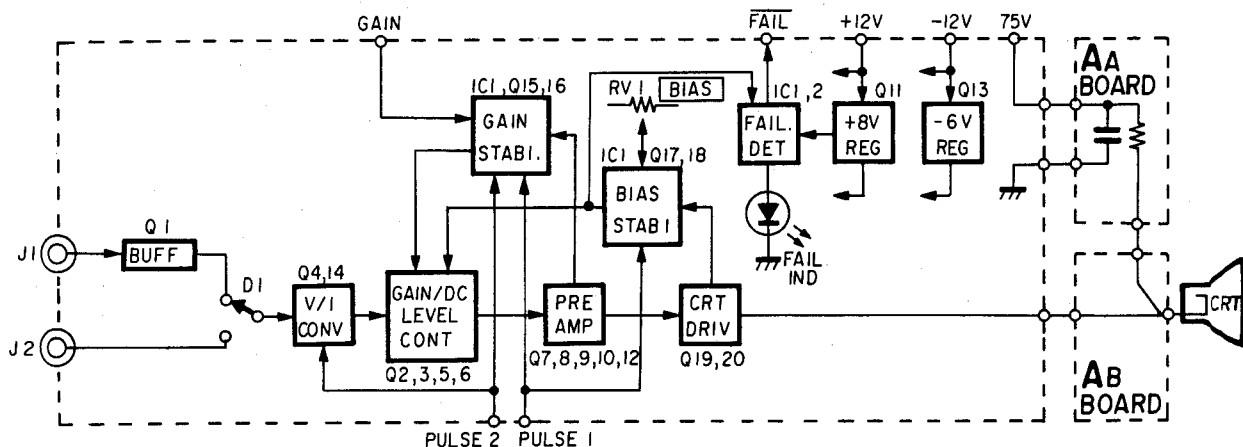


Fig. 51

#### 3-10-2. A Board Inputs

##### (1) Power Supply

Supplies 75V, +12V and -12V power.

##### (2) Input Signals

An external 0.714 Vp-p video signal is delivered to J1, and the signal from the built-in SG (B board) to J2.

##### (3) Clamp Pulse (PULSE1) and Reference Pulse (PULSE2)

Pulses, for which the timings below are required, are supplied by the B board.

##### (4) The GAIN CONT control DC voltage is supplied to the GAIN terminal.

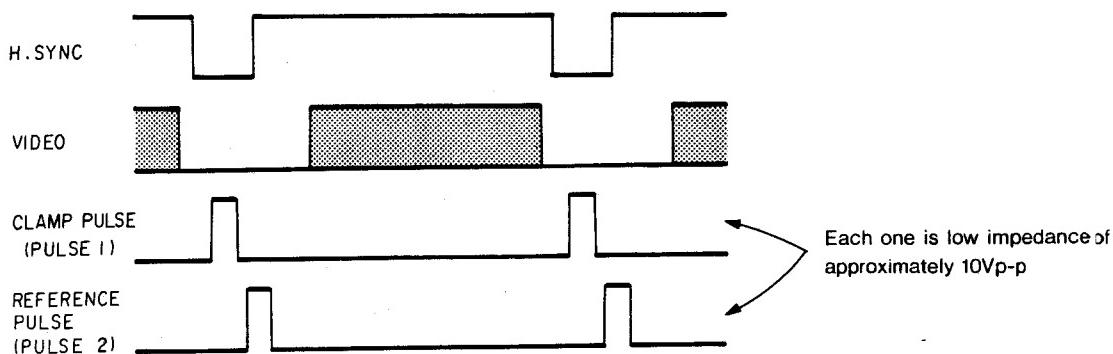


Fig. 52

### 3-10-3. Operation of Each Block

#### (1) Buffer and Input Switch Block

The video signal input from J1 is terminated at  $50\Omega$  by R1 and R2, then it goes into the Q1 emitter follower. The emitter of Q1 can also receive a signal from J2 after it passes through D1. Normally, since J2 DC is biased at  $-3V_{DC}$ , D1 is cut off and the input from J1 appears at the emitter of Q1. As the signal sent in from the B board is input at a  $+3V_{DC}$  bias, switching to the signal from the built-in SG occurs when Q1 is cut off and D1 goes on. The selected input signal is DC level-shifted by D2, then input to the V/I CONV block.

#### (4) Preamplifier Block

The video signal undergoes DC level shift at D4, then it is amplified 100% by Q7. After passing through the Q8 emitter follower buffer, the signal undergoes preamplifier output processing at Q9 and it is input to the CRT drive. Q10 works as a current source for Q9. The signal is also sampled at the base of Q9 by the Q12 buffer and sent to the gain stabilizer circuit to maintain a constant amplifier gain.

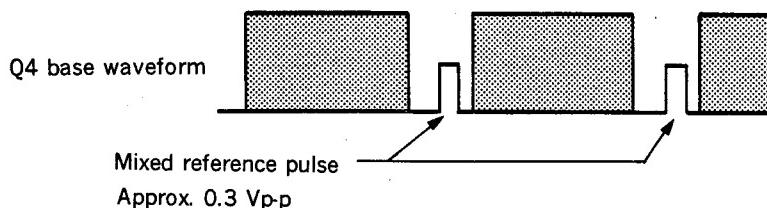


Fig. 53

#### (2) V/I Conversion Block

The reference pulse (PULSE2) for gain control is mixed with the signal at the Q4 base input. The current source consists of Q14, whose collector is alternately set to a low impedance by a large-capacity capacitor. Potential of this collector changes according to the DC level of the signal input to J1, allowing for DC cut without a coupling capacitor. V/I conversion is performed by R9 and Q4, and current is input to the gain control block.

#### (3) Gain/DC Level Control Block

Gain control is performed by dividing the signal current at Q2 and Q3. The voltage at the base of Q3 is fixed at 0V. When voltage at the base of Q2 decreases, more signal current flows into Q3 and the gain increases. The base of Q2 is controlled by the gain stabilizer, which will be discussed later. D3 has been connected in series to improve high-range isolation and circuit operation stability when gain is attenuated. The gain controlled signal passes through the Q5 cascade amplifier, and out of its collector. Power for the Q5 collector load resistor is supplied by the bias stabilizer block, allowing for optimum setting of DC bias. After undergoing gain control and DC level control as explained, the signal proceeds to the next stage via the Q6 emitter follower.

#### (5) CRT Drive Amplifier Block

The signal is V/I-converted by Q19 and passes through the Q20 cascade amplifier. These two transistors typically amplify the signal to 40 Vp-p (approx. 20 times the preamp output). The signal is then sent to the CRT cathode via the AB board. The AB board is equipped with a floating capacity compensation circuit and a cathode matching circuit. There is a  $200\Omega$  load resistor on the AA board (ceramic board). Connection with the cathode and the load resistor is achieved through the AB board (flexible cable).

#### (6) Gain Stabilizer Block

DC bias is removed from the preamplified signal by C31. The clamp pulse (PULSE) is input to the Q16 gate. Since the drain-source interval is turned on only at High sections, the pedestal is clamped to  $0V_{DC}$ . Since the Q15 gate is also turned on by PULSE2 only on High sections, the potential VR at the end of the reference pulse mixed to the signal is output to the Q15 drain.

This sampled voltage (VR) is input to the IC1 (1/4) operation amplifier. There it is compared to the gain control voltage from the outside. The base voltage of the gain control block Q2 is then changed so that error becomes 0. The IC1 (2/4) operation amplifier, besides inverting polarity, also works as a buffer to drive the base of Q2 at low impedance.

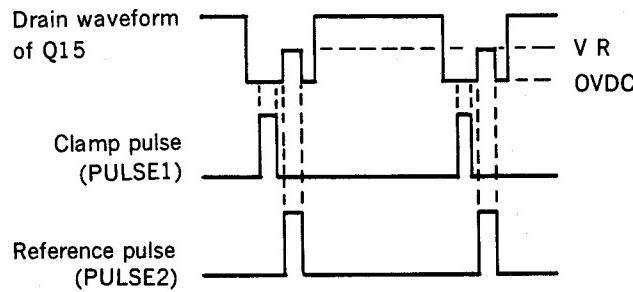


Fig. 54

#### (7) Bias Stabilizer Block

The current flowing from the Q19 emitter to the last stage is sent through R64 to be sampled by Q18. The clamp pulse (PULSE) is input to the Q18 gate. During the pedestal interval, Q18 is turned on and the potential at the emitter of Q19 is input to the IC1 (4/4) operation amplifier. This potential is compared to the voltage set by RV1 [BIAS], and feedback is applied so that error becomes 0. The output from IC1 (4/4) passes through the IC1 (3/4) inverting amplifier, in which D5 prevents negative outputs for Q17 protection. The output then passes through the Q17 buffer and it is delivered as a power supply for load resistor R14 of the DC level control block Q5. This voltage allows for bias control of the preamplifier and the CRT drive amplifier located after Q6. By adjusting this DC feedback loop, which has RV1 voltage as a reference, the bias current of the pedestal (background) section can be kept constant. This allows for a stable setting of pedestal voltage.

#### (8) +8V, -6V Regulator Block

Since amplifier blocks work in a DC direct-coupled configuration and high fT transistors are used, +8V and -6V power is supplied to the preamplifier. Q11 is used for the +8V system, and Q13 for the -6V system. Both are series regulators.

#### (9) Failure Detection Block

This block incorporates a circuit to detect circuit misoperation. The following two points are monitored : ① Is DC bias within the normal range ? ② Is power supply current below specifications ? Both values are compared to the reference voltage at the IC2 comparator. Regarding point ①, output of the IC1 (3/4) power supply, which is subject to DC level control, is considered normal if within the approximate range of 5 to 10V corresponding to the intermediate potential divided by R49, R50 and R51. As for ②, current is detected on the basis of the voltage drop across R46 in the +8V regulator. The condition is considered abnormal if the detected current goes beyond a level of approximately 100 mA. Abnormal current detection is possible even when there is no 75V power supply because the base current of Q19 increases. When an abnormality occurs, the failure indicator LED is lit by IC2, and the FAIL signal is output through an open collector. The FAIL signal for each channel is connected by a wired OR on the B board.

### 3-11. M1 BOARD

A block diagram of the M1 and M2 boards is shown in Fig. 55. The M1 board is a digital control circuit whose main component is an 8-bit microprocessor. It performs data calculation for convergence and focus compensation, and produces the digital data required for picture distortion compensation. A 16-Kbyte EEPROM is provided as memory for all adjustment data. This data can be updated from an external computer or from the remote controller via the RS422A serial interface. This board also contains a data processing circuit for the landing checker and white balance auto setup, and has a self-diagnosis function.

#### 3-11-1. CPU/Peripheral Circuit

The Z-80A (IC1) is the main component of digital circuit control. It uses a 16-bit(A0 to A15) address port, an 8-bit (D0 to D7) data port and an external control terminal. The main memory units (IC4 to IC8) are located on the CPU address and data bus. The memory to be accessed is selected by IC9 (address decoder.) IC1 also has an  $\overline{INT}$  terminal for interrupt processing when necessary. Interrupt request timing is controlled by IC2 (CTC), which generates the  $\overline{INT}$  signal synchronized to three trigger inputs: TRG0 (VD), TRG1 (external switch) and TRG2 (external communication control). Besides controlling CPU interrupt processing, IC2 divides the clock pulse input to the TRG2 terminal by 12 and delivers the baud rate clock pulse (153.6 kHz) to IC3 (USART). The CPU clock frequency, 3.6864 MHz, is supplied by the X1 crystal oscillator. When power is turned on or the S1 switch on the M1 board is pressed, IC25 generates a reset pulse of approx. 500 ms to initialize the CPU and its peripheral control ICs and perform adjustment data transfer (EEPROM to RAM and DAC).

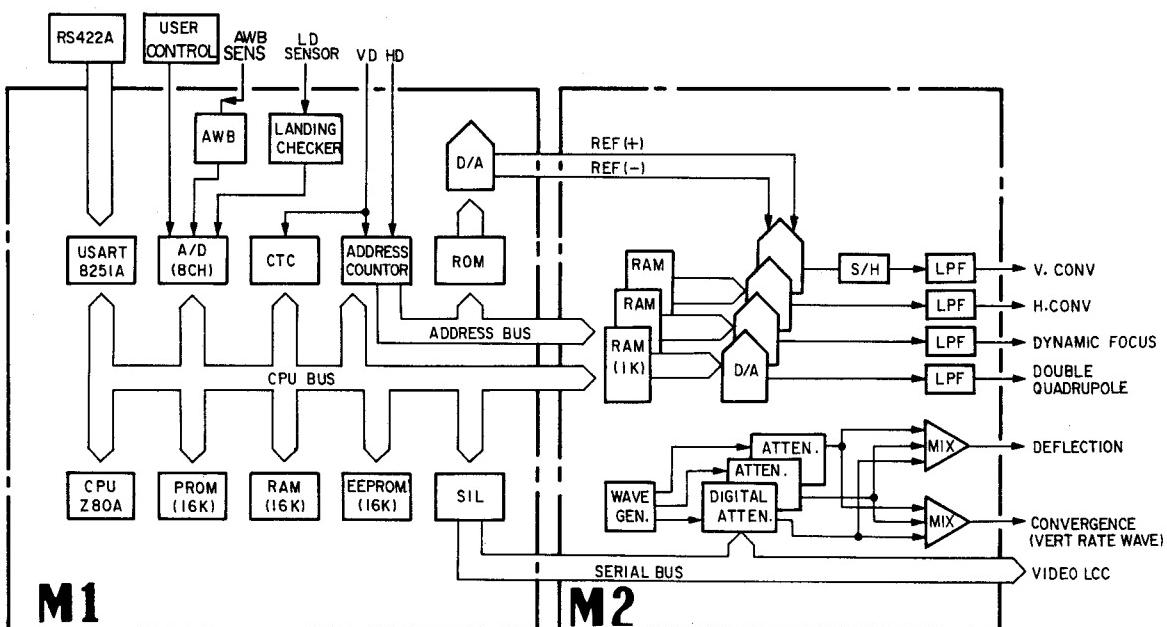


Fig. 55

### 3-11-2. External Communication Control Block

Communication with external equipment is performed through IC3 (USART, Universal Synchronous/Asynchronous Receiver Transmitter).

Asynchronous serial transfer is used as a communication format, and the baud rate is set to 9,600. See Table 11-1 for details on the communication format. The timing chart of the data format of send/receive and the handshake line is shown in Fig. 56.

Input/output lines of the IC3 serial ports (TXD, RXD, DTR, DSR) are connected to IC26 via the selector IC27. IC27 has been provided for communication system self-diagnosis. It switches to self-diagnosis mode every time power is turned on, with TXD (IC3 pin ⑯) sending data to RXD (pin ③) to check if the transmitted and received data match. This test is completed instantaneously, and if a normal result is obtained, the selector circuits of IC27 return to the connection pattern shown in the circuit diagram, and the communication mode is set. IC26 is a differential driver which converts the signal to the RS-422A format.

SIGNAL FORMAT	RS-422A
BAUD RATE	9,600
MODE	ASYNCHRONOUS
CHARACTER LENGTH	8 bits
PARITY	EVEN
STOP BIT	1 bit

Table 11-1. Communication Format

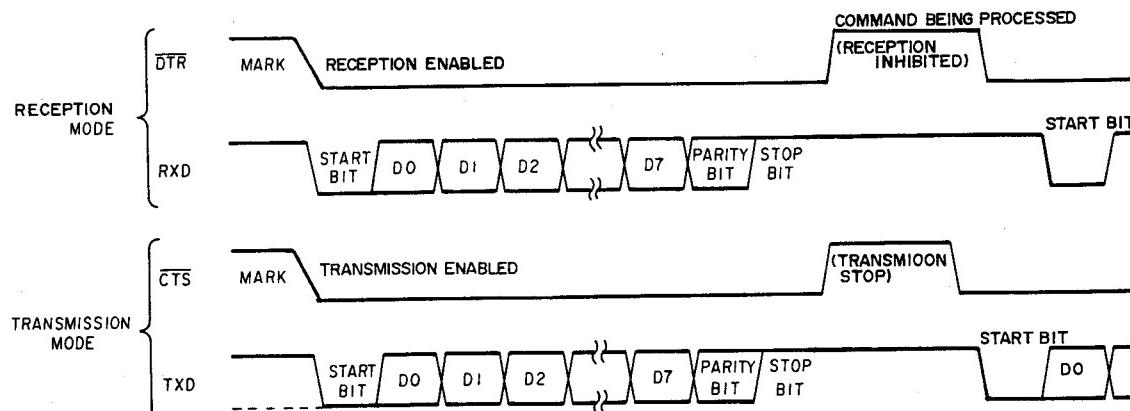


Fig. 56

### 3-11-3. Memory Block

The main memory block is composed of IC4 to IC8. The memory addresses assigned to each device and their functions are shown in Table 11-2.

The CPU executes commands in sequence following the program stored in IC4, but actual data processing is performed by the operation RAMs, IC5 and IC6.

The compensation data for each function is processed in IC5 and IC6 when the CPU receives the adjustment commands and data through the communication interface. IC7 and IC8 are nonvolatile memories where all adjustment data required for the monitor's operation are stored. The data is sent to IC5, IC6 and to other boards when power is turned on or the **RESET** button is pressed. Inversely, when the CPU receives the **SAVE** command, RAM (IC5, IC6) contents are copied onto IC7 or IC8 and the adjustment data is rewritten. Memory addresses from 8000 to 9FFF (h) are assigned to RAM IC9 thru IC15 on the M2 board. Addresses 6000 to 7FFF (h) are not used.

Function	Assigned address
IC4 16-Kbyte PROM	0000 - 3FFF (h)
IC5 8-Kbyte SRAM	4000 - 5FFF (h)
IC6 8-Kbyte SRAM	A000 - BFFF (h)
IC7 8-Kbyte EEPROM	C000 - DFFF (h)
IC8 8-Kbyte EEPROM	E000 - FFFF (h)

Table 11-2.

### 3-11-4. Address Counter Block

IC28 and IC29 generate memory addresses for the digital convergence and focus compensating circuits. In order to divide the screen into 22 points horizontally (including horizontal blanking) and 17 points vertically, this circuit obtains a regular counter output from HD and VD. The internal equivalent circuit of IC29 is shown in Fig. 57.

The horizontal counter reference clock pulse is obtained from the HD pulse input to IC28 and the PLL circuit, which consists of the programmable divider IC29 (set to 22) and the HD pulse. This reference clock pulse is input to the lck terminal of IC29, where horizontal addresses Q0~Q5 (HA0 to HA5) are generated by an IC29 built-in 6-bit binary counter (I).

The vertical counter reference clock pulse is input to the 2ck terminal of IC29 by the HD pulse. Then vertical addresses are generated by the IC29 built-in 8-bit binary counter (II) and 4-bit binary counter (III), which are connected in cascade. The 8-bit binary counter (II) outputs Q6 to Q13 (RA0~RA7) are counted for one interpolation period (256 lines), then used as addresses (RA0 to RA7) for interpolating ROM IC 36. The 4-bit binary

counter (III) generates 256-line-period signals required to obtain addresses for even and odd adjustment points (17 in total), time-dividing them with an internal selector and sending them to Q14 to Q17 (VA1 to VA14).

The S3 DIP switch is used to adjust the phase of adjustment points and the compensating waveform. This is accomplished by changing the V.BLK time of the input signal.

Values assigned to each bit are as shown in Fig. 58.

The S3 setting is determined from the equation  $126 - V_{BLK} + V_{fp}$ .  $V_{BLK}$  is the number of horizontal lines (64) that occur during vertical blanking.  $V_{fp}$  is the vertical front porch which equals 3 horizontal lines. Therefore, the correct S3 setting (for the DDM-2801C timing) should equal 65 ( $126 - 64 + 3$ ). For odd numbers, set to the next highest even value.

#### Example:

When  $V_{BLK} = 64H$

Setting =  $126 - 64 + 3 = 65$

Set to 66.

Note : Standard DDM-2801C timing.

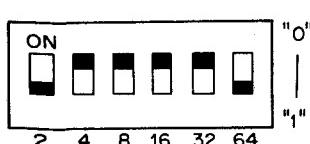


Fig. 58.

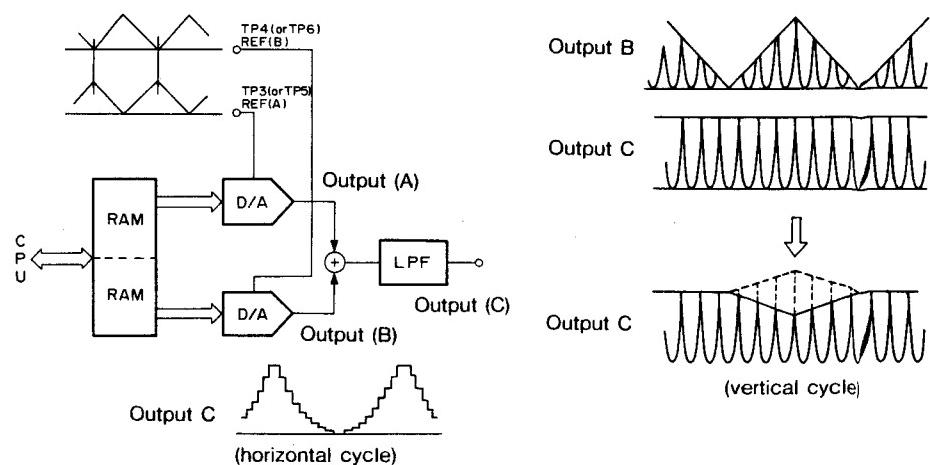


Fig. 59. Principle of Vertical Interpolation

### 3-11-5. Interpolation Waveform Generator Block

This circuit, composed of IC36 (PROM), IC37 (D/A converter) and IC38 (operational amplifier) generates the modulating waveform required for data interpolation in the vertical (amplitude modulation) direction. IC36 (PROM) data is read out in 256-line periods by the RA0 to RA7 address signal generated at the address counter block, and the four voltages shown in Fig. 60 are output from IC38. These waveforms are input to IC9 through IC15 on the M2 board, and are used as reference voltages for the D/A converters incorporated into the ICs as shown in Fig. 59. Compensation data read out from RAM is amplitude-modulated by the D/A converter, allowing for proper vertical interpolation. The four compensating waveforms are paired (TP3 with TP4, TP5 with TP6). The output from TP5 and TP6 is used for vertical convergence compensation, and that from TP3 and TP4 for horizontal convergence and focus/beam spot compensation.

### 3-11-6. Serial Data Transmission Block

This block transfers data to serial D/A converters and shift registers on the M1 and other (M2, B, S) boards. This block converts parallel data to serial data and outputs it, one bit at a time, to the various blocks at the rising edge of the SR CLK

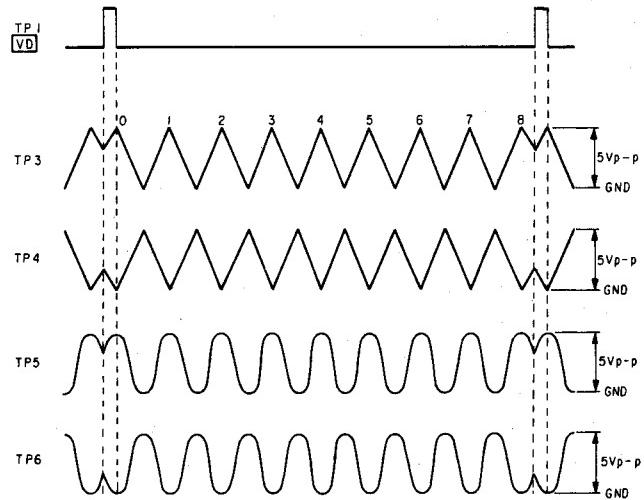


Fig. 60

pulse generated by IC10. CPU bus lines D0 (M1 board), D1 (B board), D2 (M2 board) and D3 (S board) are used as data lines. As shown in Fig. 61, one data block consists of 12 bits ; 4 for address and 8 for data. Data is output when a load pulse is sent in.

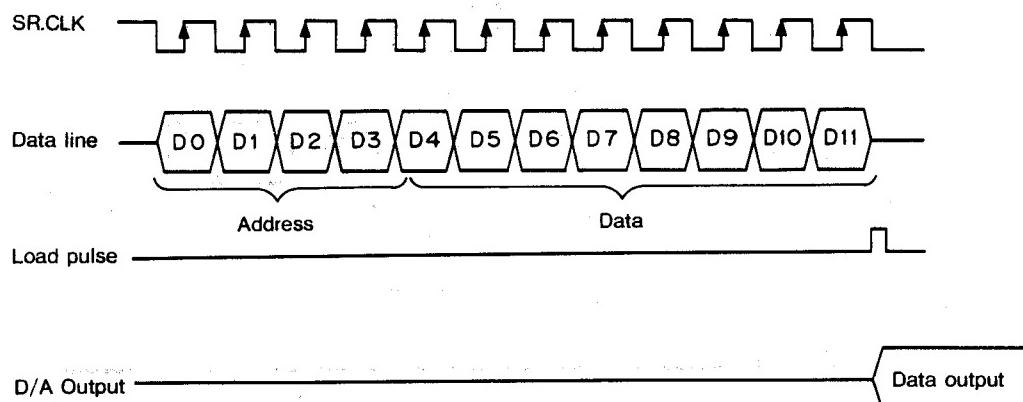


Fig. 61

### 3-11-7. A/D Converter Circuit

IC32 is a sequential conversion type A/D converter with 8 bits of resolution. It converts the 8-channel analog input voltage into 8-bit serial data, which is then output from Pin ⑩. DC voltage from the user control (J3 board) is input to analog

terminals A0 to A4. A stable DC voltage ( $5V_{DC}$ ) is output from Pin ⑨ of IC32 and used as user control reference voltage.

### 3-11-8. Landing Adjustment System

This circuit, used for the automatic setup of purity (landing) adjustment, is composed of IC40 and IC32. Its operating principle is shown in Fig. 62. First, a small current detected by the landing sensor (DDM-LS10) is amplified by IC40 (1/4 and 2/4) AGC amplifier. Then it undergoes peak holding at IC40 (3/4) and it is sent to the A/D converter via the IC40 (4/4) buffer. The current flowing through the LCC coil or the purity coil components located close to the landing sensor is controlled by the data sent into the A/D converter so that maximum green output is obtained over the entire screen. Q3 and Q4 generate a delay pulse from the  $\overline{VD}$  signal.

During this delayed period, the peakheld voltage undergoes A/D conversion, and peakholding is cancelled by the reset switch Q2.

### 3-11-9. Auto White Balance Adjustment System

The circuit composed of IC43, IC34 and IC32 as shown in Fig. 63 is a highsensitivity digital ammeter that accurately measures the CRT beam current with the current detector circuit on the P board. The IC34 D/A converter is provided to cancel the HV Block, focus potentiometer and other bleeder currents contained in ABL. IC 34 generates A3 and A2 output voltage. A3 output voltage is used to cancel the bleeder current coarsely, and A2 to fine cancel it.

The principle of the auto white balance adjustment system is as follows.

The F.B.T. secondary winding (ABL) current is detected, converted into analog voltage and input to the AWB SENS terminal. This ACO in-signal is mixed to the IC34 D/A converter output voltages A2 and A3. As a result, the actual real beam current signals are obtained as AWB SENS1 and AWB SENS2 from IC43 (1/4) and converted into two types of digital data at the IC32 A/D converter. These digital data are processed so that the white signal level and the black signal level are set to maintain the constant beam currents, respectively.

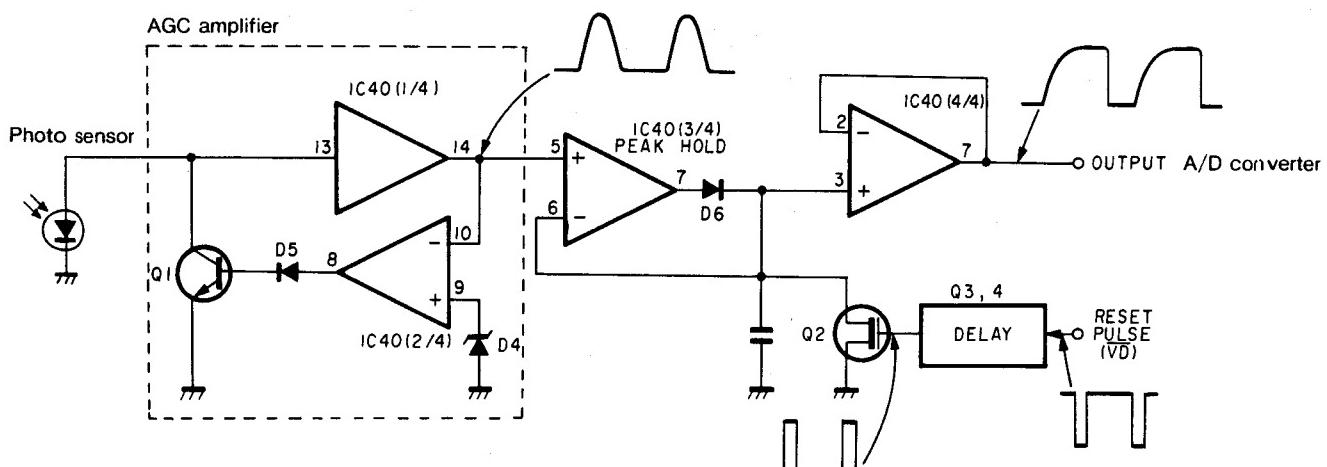


Fig. 62

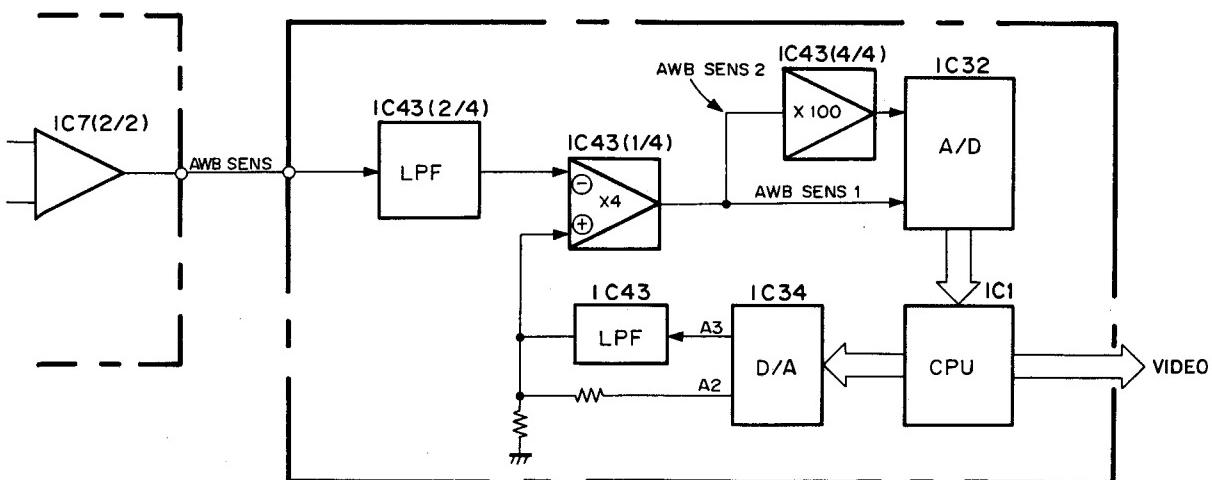


Fig. 63

### 3-11-10. Self-Diagnosis Function

The M1 board is provided with a self-diagnosis function. When power is turned on, it performs the checks shown in Fig. 64. During execution of the main routine, the M1 board status is constantly displayed. The board status is sent to a specified location in IC5 (RAM) and then displayed on the ND1 7-segment display. The meaning of each number is shown in Fig. 65. This status can also be monitored with an external computer or remote controller using the "STATUS" command.

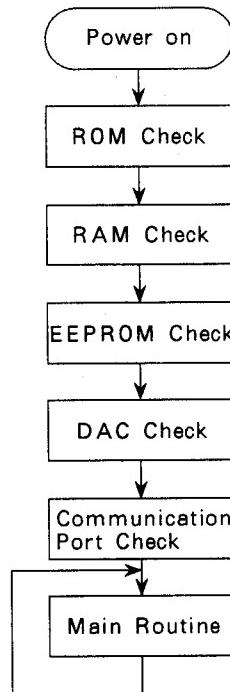


Fig. 64. Flow Chart of the Self-Diagnostic System

Display Number	Failure Content	Failure Area	Error Detection Method
7	board failure	Possible A, E, G, M, P, R, S failures board or FAN	Information from the T board (continuous)
6	communication system failure	IC3 of M1 board	Loop back test (power on) Communication error detection (continuous)
5	serial DAC failure	M1↔IC24 of B board, IC3 of S board, M2B, M2C of M2 board	Send test data (power on)
4	EEPROM data failure	IC7, 8 of M1 board	SAM(sequential access method) (power on) Check test
3	RAM operation failure	IC5, 6 of M1 board, IC9~15 of M2 board	Write and Read out test (power on)
2	EPROM data failure	IC4 of M1 board	SAM(sequential access method) (power on) Check test
1	_____	_____	_____
0	no error	_____	_____

Note : If there is a malfunction, the number corresponding to the malfunction will flash every two seconds.

Fig. 65. Failure Indication of 7 Segment Display

### 3-12. M2 BOARD

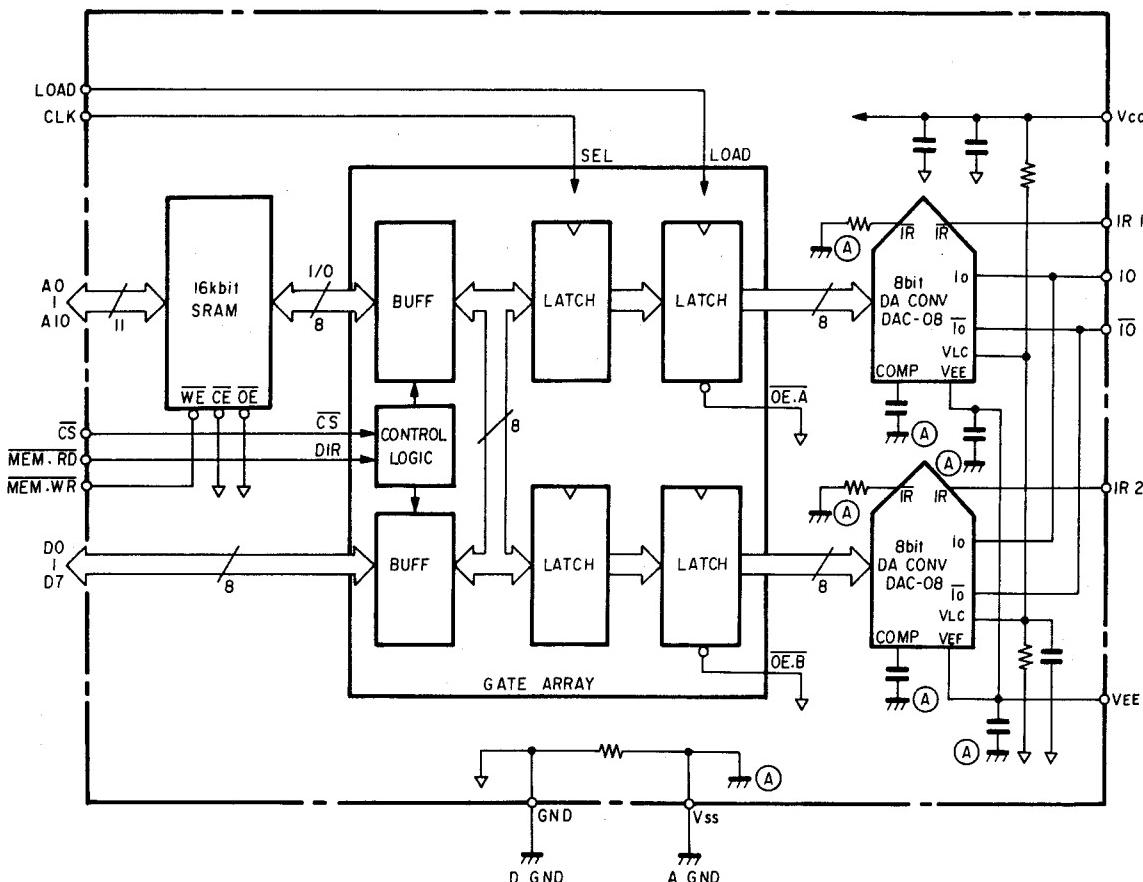
The M2 board generates picture distortion compensation signals for the deflection system, and also compensation signals for accurate adjustment of convergence and focus. The amplitude and waveform of the output signals change according to the digital data transmitted from the M1 board. The M2 board can be broadly divided into four circuit blocks : (1) digital function generator block composed of 7 HICs to create compensation signals, (2) M2A board, which generates DC and vertical period reference signals, (3) M2B and M2C boards, which produce multiple and varied voltage outputs from the reference signal, (4) Mixer block, which mixes various signal voltages from the M2A, B and C boards and outputs the resulting signal.

#### 3-12-1. Digital Function Generator Block

This is an arbitrary waveform generation circuit composed of memory (RAM) and a high-speed D/A converter. It is equivalent to the D/A converter block of the digital conver-

gence/focus system. Fig. 66 shows the built-in equalization circuit, consisting of IC9 to IC15 (SBX-1572). The address and data lines, having a common bus structure, are connected to the M1 board through a buffer (IC5 to IC7). Data write to each IC memory is controlled by the CS (Chip Select) and WR (Write) signals. When detectors IC3 and IC4 select the "LOW" output line simultaneously, memory write is enabled. As for data read, data from the address designated by the memory selected by the IC3 output (CS signal) can be read when the common RD (read) signal is "L". When power is turned on, IC9 to IC15 are set to write mode, and data is transferred from the M1 board and written in to RAM.

Next, the ICs are switched to the read mode. When a regular address signal from the address counter of M1 is received, the RAM data is converted into continuous analog signals by the D/A converter. It is then output from IC17, 19, 27 and 28 as a voltage waveform. IC21 and IC18 form a sample-and-hold circuit to remove D/A converter glitch noise.



**Fig. 66. SBX-1572 Equalization Circuit**

### 3-12-2. Reference Signal Generator (M2A board)

The M2A board generates the vertical period reference waveform and the reference voltage used as an input for the digital attenuator. The vertical drive pulse (VD) sent from the E board is input to pin ③ of the M2A board. Then it passes through the Q7 inverting buffer and it is output from pin ⑨ (VD). IC1 (1/2) and Q1 form a Miller integrator circuit that generates a zero-cross vertical sawtooth wave from the reference voltage D1. Both positive and negative peaks of this wave are kept constant by the AGC circuit composed of IC1 (2/2) and IC2 (2/2). IC3 (2/2) works as a comparator which produces a square wave (V.SQR) from the V.SAW

waveform.

The Miller integrator composed of IC2 (1/2) and Q2 generates a vertical parabolic wave (V.PARA), which is delivered to the two peak-clamp circuits Q3/Q4 and Q5/Q6. Q3/Q4 clamps the V.PARA wave so that at its peak it equals the level of the reference voltage DC2, and Q5/Q6 does likewise so that the minimum level equals ground potential. The wave is then output from both circuits. IC3 (1/2) superimposes the reference voltage DC1 to the V.SAW waveform and outputs the resulting signal. Fig. 67 shows the voltage waveforms output from the M2A board.

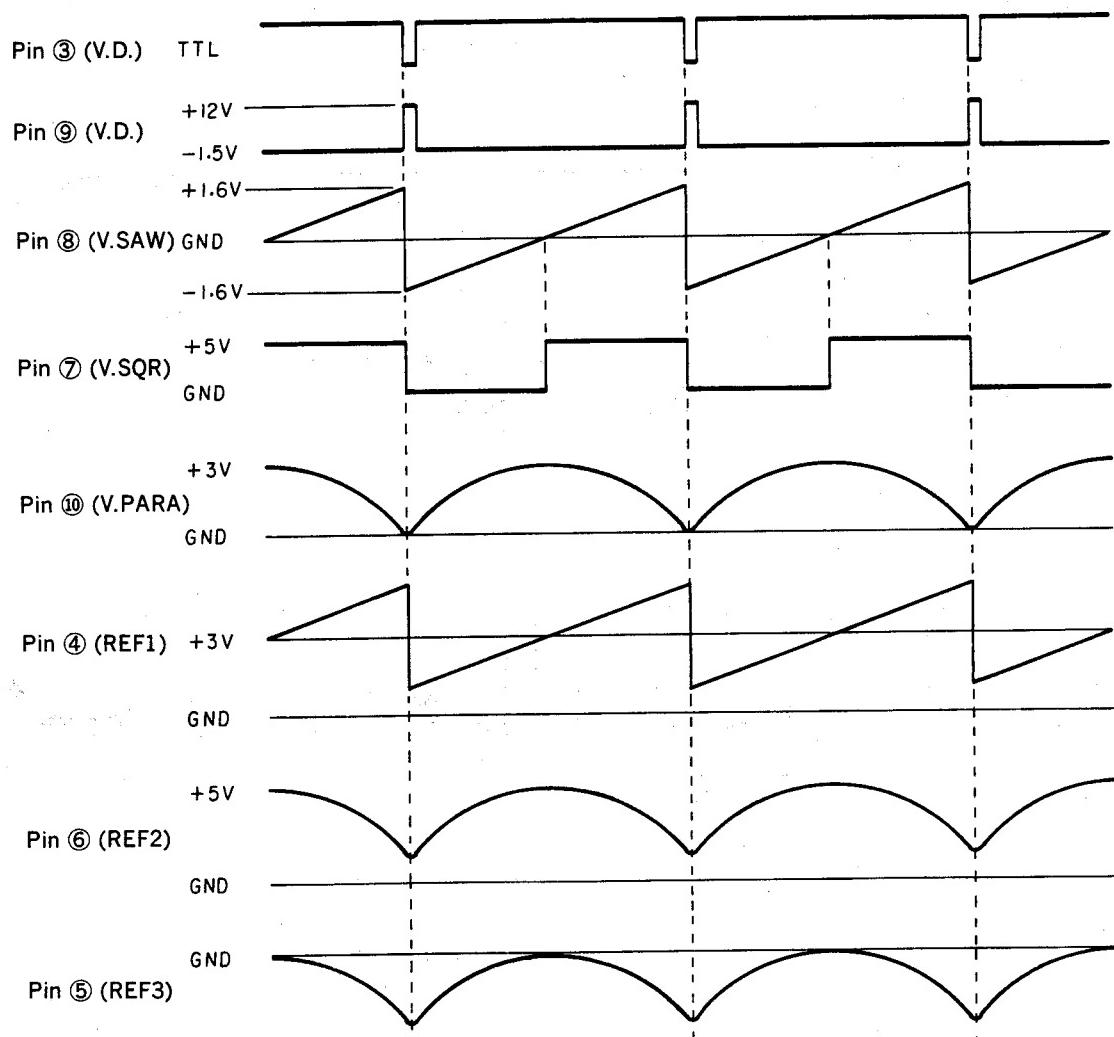


Fig. 67. M2A Board Output Waveform

### 3-12-3. Digital Attenuator Block (M2B and M2C boards)

The M2B and M2C boards form a digital attenuator composed of an 8-bit serial D/A converter and an operation amplifier. Each of them is provided with several common analog input terminals and 16 independent output terminals. The M2B board uses the stable reference voltage DC3 (2.5 V<sub>DC</sub>) as an input.

It outputs, through the adder composed of IC3 to IC6, the voltage obtained by multiplying the DC3 voltage by the digital value at IC1/IC2. The direct current DC3 from the AI terminal (pin ②) and the BI terminal (pin ⑨) is applied to the  $\ominus$  side of each channel's adder. This causes the output voltage of the operation amplifier to change within the -2.5 V<sub>DC</sub> (data : 00h) to +2.5 V<sub>DC</sub> (data : FFh) range. There are 16 output channels. A01 to A07 are used for deflection system control, and B01 to B04 for static convergence adjustment. The other terminals are open.

The M2C board has been given a different structure from the M2B board in order to make the AC signal (vertical period

waveform) variable. Fig. 68 illustrates operation of the M2C board. The reference waveform REF2 input at the VRA terminal is multiplied by the digital value (d) at IC1, and sent to IC3 (or IC4). The centerclamped voltage waveform REF3 is input at the AI terminal. It is then input to the  $\ominus$  terminal of IC3 (or IC4) and mixed with the IC1 output voltage. The resulting voltage ( $2d \cdot V_{REF2} - V_{REF3}$ ) is applied to the  $\ominus$  terminal of IC5 (or IC6) and inverted. The DC voltage ( $d \cdot DC2$ ) attenuated by IC2 is applied to the  $\oplus$  terminal of IC5 (or IC6). The voltage resulting from the formula below is then obtained at the B0 output terminal.  $V_{BO} = 2d \cdot DC2 - (2d \cdot V_{REF2} - V_{REF3}) = V_{REF3} + 2d (DC2 - V_{REF2})$

The REF2 voltage is generated so that it reaches a level equal to the DC2 voltage at its peak (center). The composite voltage ( $DC2 - V_{REF2}$ ) matches the negative  $V_{REF3}$ . Therefore, it can be expressed that  $V_{BO} = V_{REF3} - 2d V_{REF2} = (1 - 2d) V_{REF3}$ , and  $V_{BO}$  will change within the  $V_{REF3}$  to  $-V_{REF3}$  range when the digital value fluctuates between 0 and 1.

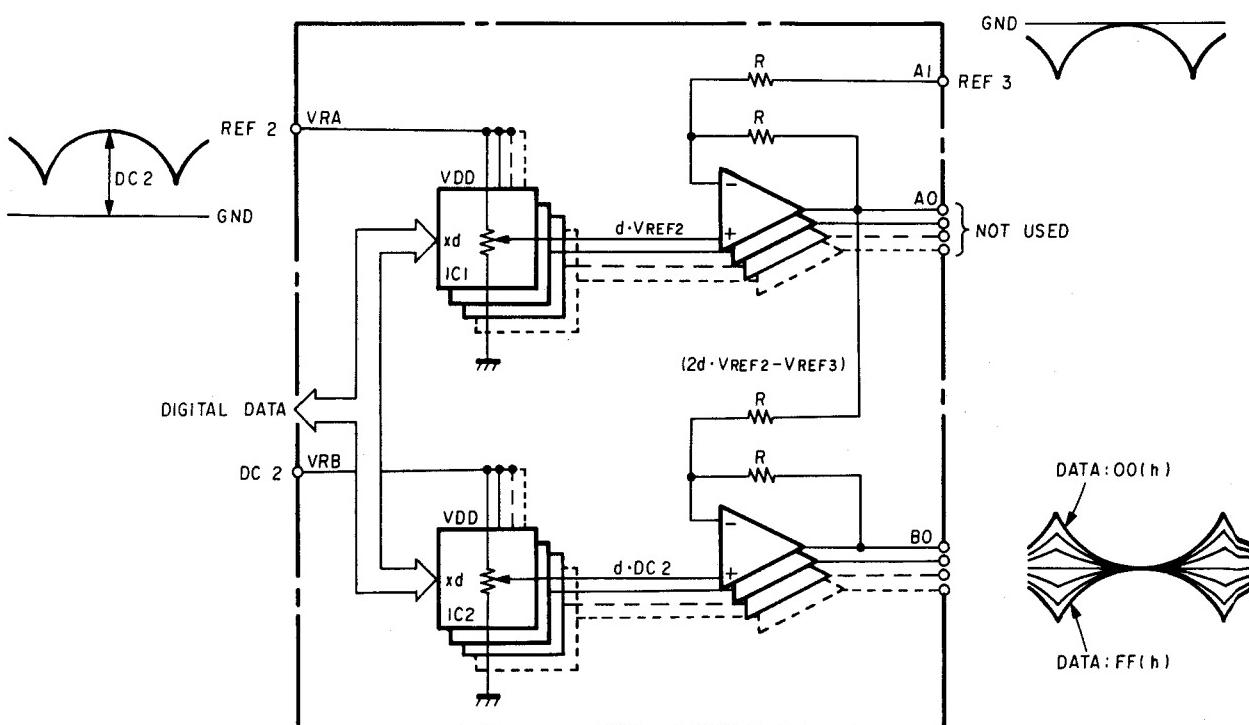
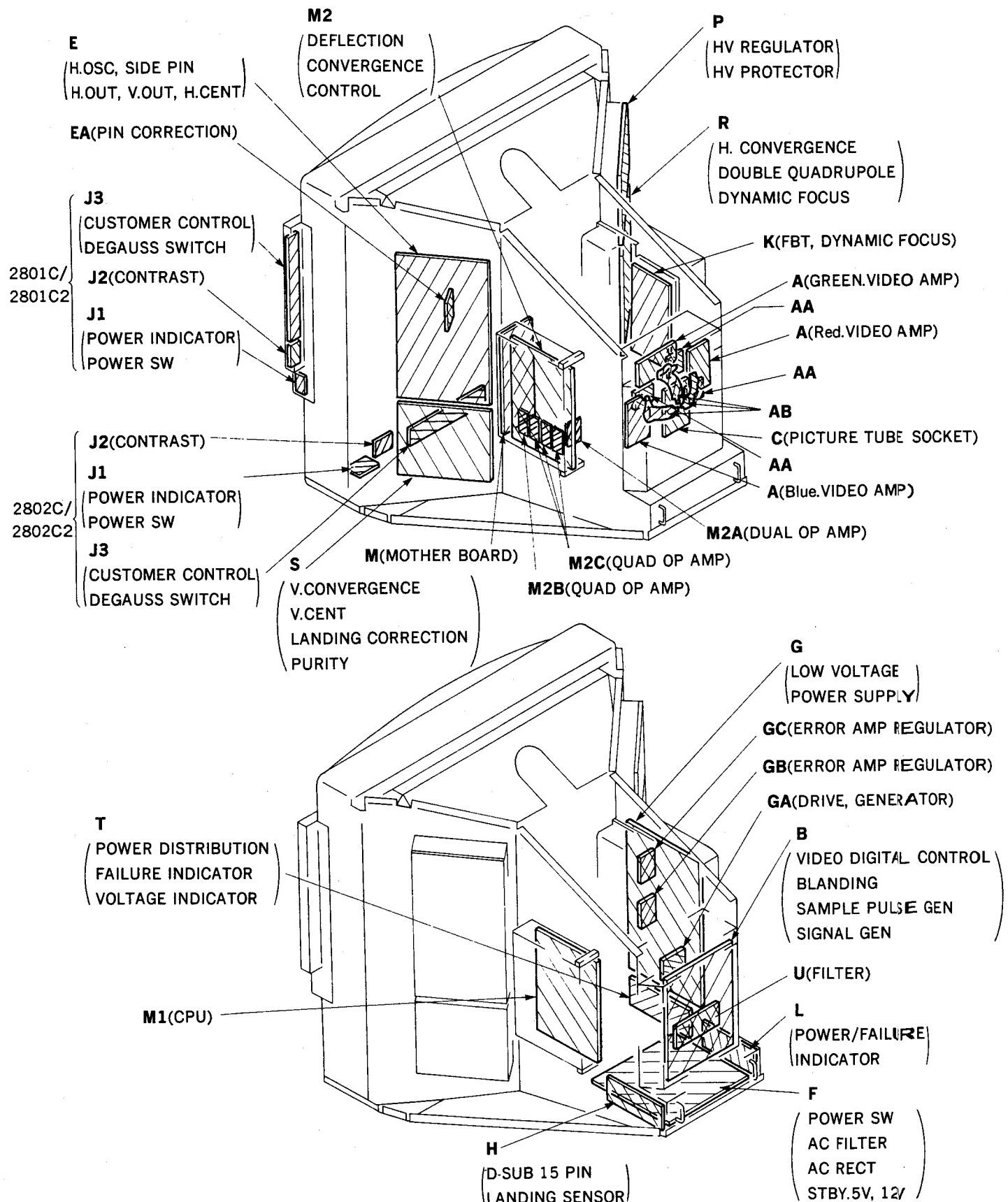


Fig. 68. Example for M2C Board Operation

## SECTION 4 ADJUSTMENT

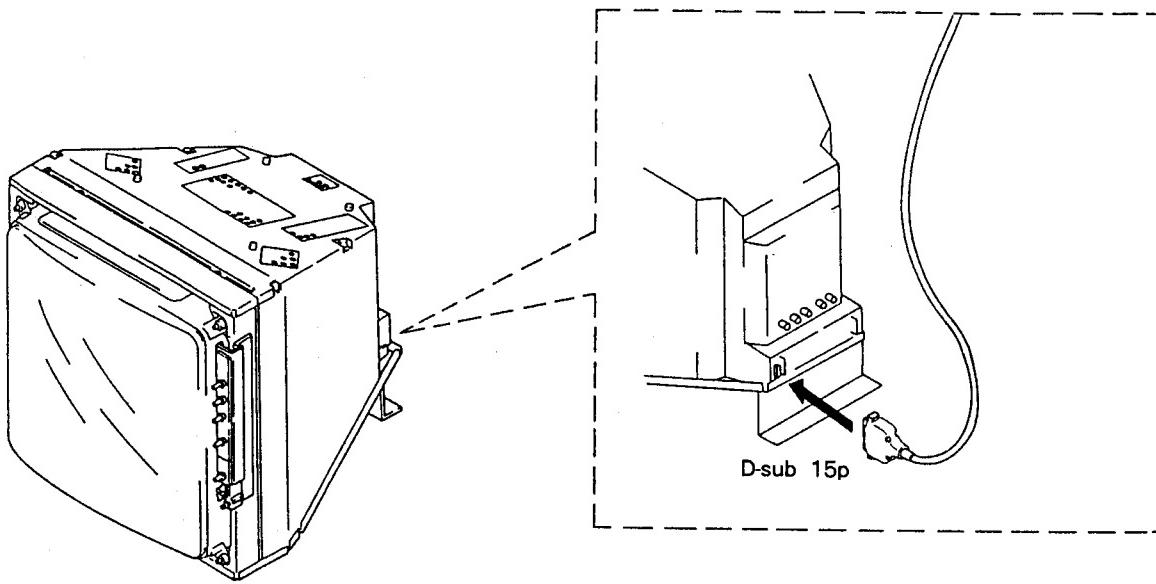
### 4-1. CIRCUIT BOARDS LOCATION



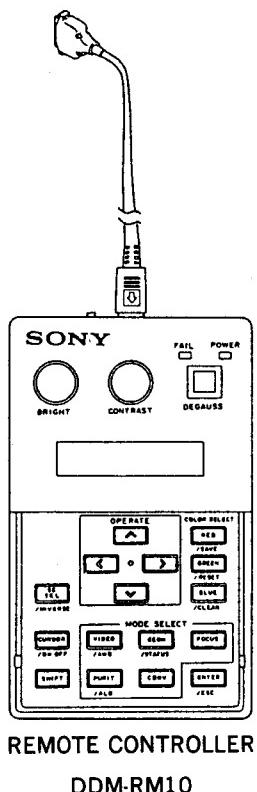
#### **4-2. EQUIPMENT SET-UP PROCEDURE**

#### **4-2-1. Connections Diagram**

Connect the optional remote controller (DDM-RM10) to the main unit as shown below, and adjust each control.



## Connect to Main Unit



#### 4-2-2. Adjusting Method Using a Remote Controller

Description and Operation of Each Part

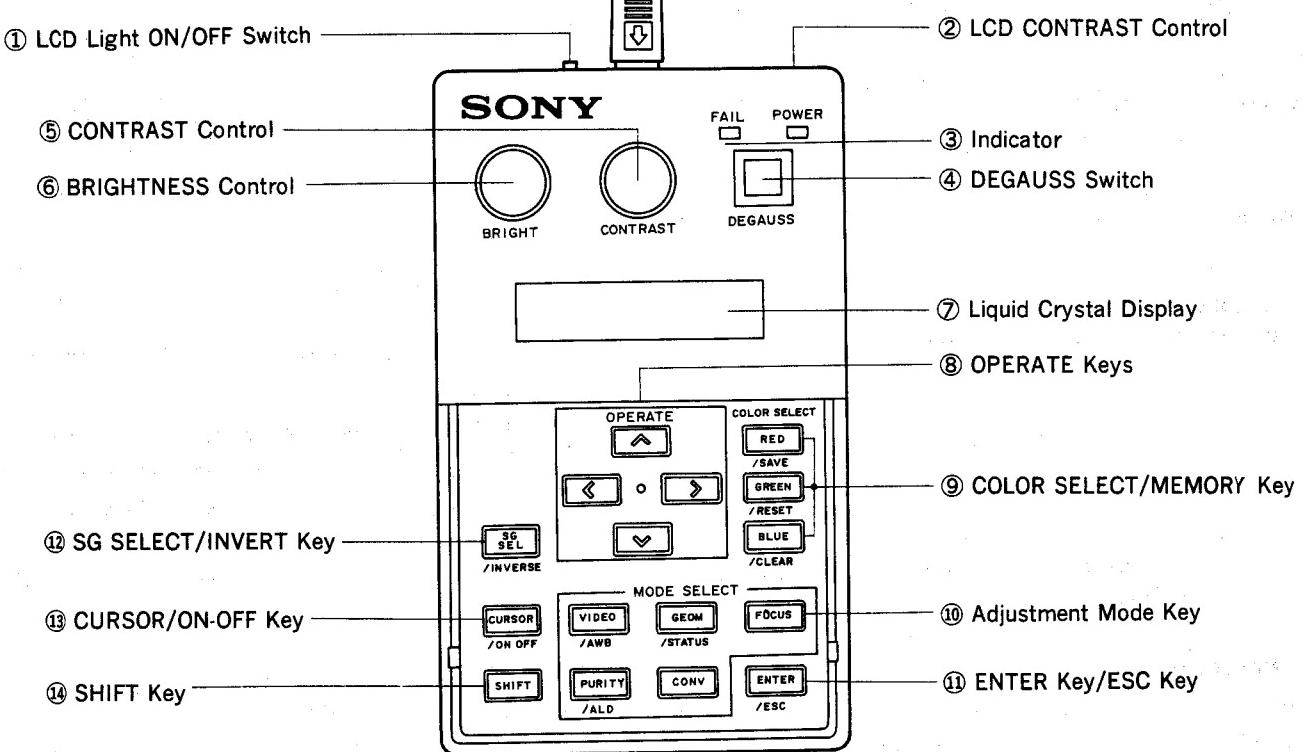


Fig. 1

##### ① LCD Light ON/OFF Switch

This switch has a lighting function for ease of operation in dark places.

When this switch is pressed, the liquid crystal display backlight is illuminated.

Press it again to turn the light off.

When power is turned on, the liquid crystal display backlight is illuminated automatically.

##### ② LCD CONTRAST Control

Used to adjust the contrast of characters on the liquid crystal display.

##### ③ Indicators

POWER(Green)

Lights up when +5V power is supplied to the remote control unit.

FAILURE(Red)

Lights up when a failure has occurred in the remote controller. When the main unit fails, the light blinks on and off.

##### ④ DEGAUSS Switch

Applies degaussing for approximately 8 seconds when pressed.

##### ⑤ CONTRAST Control

Used to adjust the screen contrast.

##### ⑥ BRIGHTNESS Control

Used to adjust brightness of the black level. It is provided with a center click indicating the mid-point.

##### ⑦ Liquid Crystal Display

Displays messages related to adjustment mode, menu, test pattern, preset, adjustment data and operating procedure.

##### ⑧ OPERATE Keys

Used for selecting the adjustment menu, changing the adjustment data, and controlling the cursor control, etc.

##### ⑨ COLOR SELECT/MEMORY Keys

Red, green and blue colors can be independently turned ON or OFF.

When these keys are used while holding the **SHIFT** key down, memory function modes such as **SAVE**, **CLEAR**, and **RESET** can be selected.

# DDM-2801C/2802C

## DDM-2801C2/2802C2

### ⑩ MODE SELECT Keys

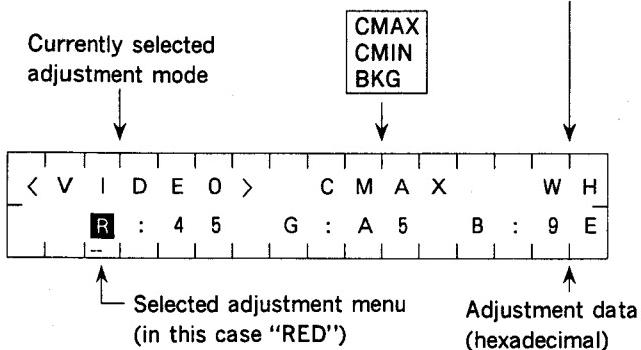
Used to select a desired adjustment mode. There are the following adjustment modes available :

#### VIDEO

This key is used to adjust the white balance. While holding the [SHIFT] key press the OPERATE keys ( $\llcorner$ ,  $\lrcorner$ ) to specify the adjustment option.

Use the OPERATE keys to move data up and down. The test pattern is automatically set to WH (white) when the equipment is placed into the VIDEO mode. (Test pattern menu ⑫)

#### <Example of Display>

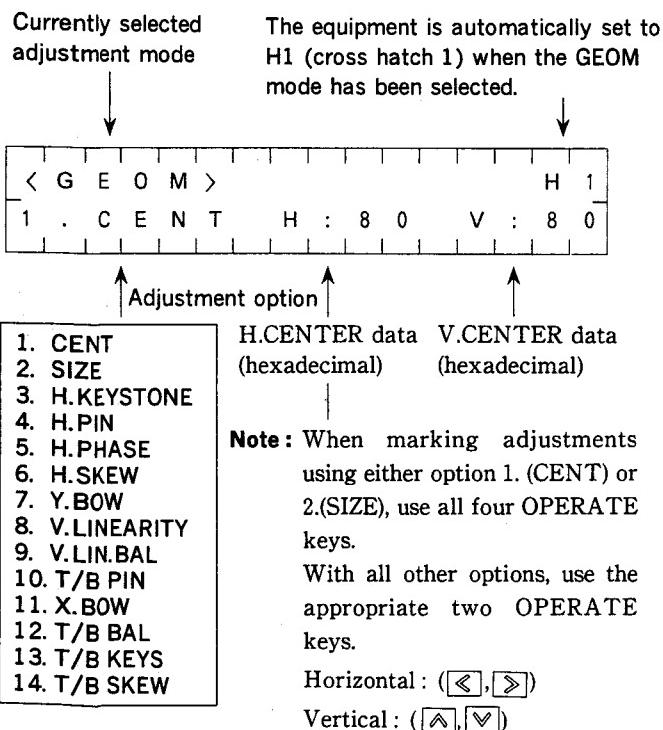


#### GEOM (Geometric)

Used to adjust any geometric distortion of the image. Press [SHIFT] + ( $\llcorner$ ,  $\lrcorner$ ) to specify the desired adjustment option.

Use the OPERATE keys to manipulate the image.

#### <Example of Display>

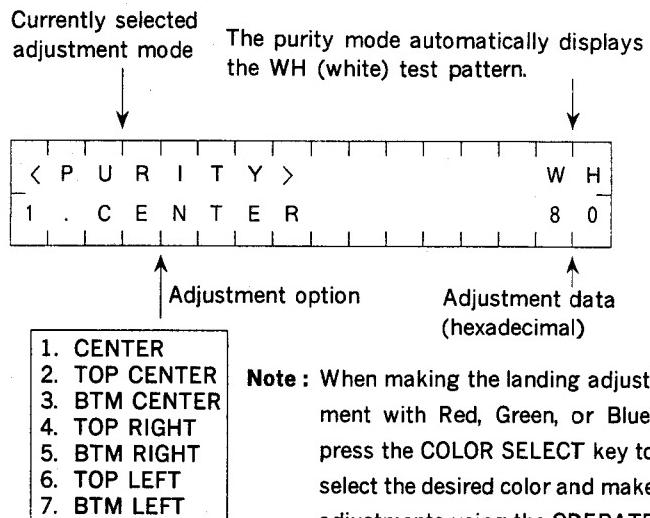


### PURITY

Used to adjust the landing.

Press the OPERATE keys ( $\llcorner$ ,  $\lrcorner$ ) to specify the desired adjustment option while holding the [SHIFT] key. Move the data up and down using the OPERATE keys.

#### <Example of Display>



### FOCUS

Used to make focus adjustment.

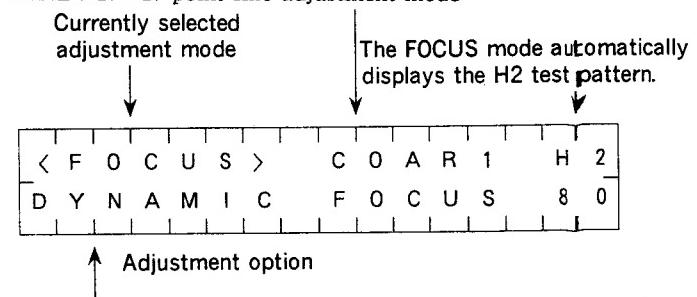
After entering the focus adjustment mode, press the [FOCUS] key to select COAR1, COAR2 or FINE. Use the OPERATE key, pressing the OPERATE key and [SHIFT] key, and adjust the focus.

To move an adjusting point (cursor), proceed by referring to the method of operating the ⑬ [CURSOR] key.

**Note :** In the COAR1 and COAR2 mode, COAR1 turns to the cursor automatic mode, and COAR2 turns to the cursor manual mode.

#### <Example of Display>

COAR1, COAR2 : 5×5 point coarse adjustment mode  
FINE : 17×17 point fine adjustment mode



DYNAMIC FOCUS : OPERATE keys ( $\downarrow$ ,  $\uparrow$ ,  $\llcorner$ ,  $\lrcorner$ ).  
SPOT AXIS : [SHIFT] + OPERATE keys ( $\downarrow$ ,  $\uparrow$ ).  
SPOT DIAGNL : [SHIFT] + OPERATE keys ( $\llcorner$ ,  $\lrcorner$ ).

### CONV

After entering the convergence adjustment mode, press the **CONV** key to select COAR1, COAR2 or FINE.

Use **SHIFT** and OPERATE keys as shown in the example below to correct misconvergence.

To move an adjusting point, proceed by referring to the method of operating the ⑪ **CURSOR** key.

**Note:** In the COAR1 and COAR2 mode, COAR1 turns to the cursor automatic mode, and COAR2 turns to the cursor manual mode.

### <Example of Display>

COAR1, COAR2 : 5x5 point coarse adjustment mode

FINE : 17x17 point fine adjustment mode

Currently selected adjustment mode	↓	CONV mode automatically displays H1 (cross hatch 1)	↓
< C O N V >	C O A R 1	H 1	
H . C O N V . R / B		8 0	

↑ Adjustment menu

H. CONV R/B: OPERATE keys (**◀**, **▶**).

H. CONV B: **SHIFT** + OPERATE keys (**◀**, **▶**).

V. CONV R/B: OPERATE keys (**▽**, **△**).

V. CONV B: **SHIFT** + OPERATE keys (**▽**, **△**).

### • /ALD (Auto Landing)

ALD is used to adjust the landing.

Press the **PURITY** key while holding down the **SHIFT** key. Next, press the **ENTER** key.

Perform this adjustment with the optional LS-10 landing sensor.

### <Example of Display>

C l i c k p r o b e o n 7	
c u r s o r s , t h e n E N T	

Place the landing sensor on the face of the monitor directly above each other seven on-screen cursors which will automatically appear in succession. When a pure green field has been obtained, press the **ENTER** key, else click the sensor once more and repeat the process. Use the **ESC** key to exit the ALD mode at any time.

### • /STATUS

Used to check the operational status (pass/fail) of the main unit.

Press the **GEOM** key to display the status information of the monitor while holding the **SHIFT** key. To feed the menu, press the OPERATE keys (**◀**, **▶**). When returning to the adjustment mode, press the **ENTER** key.

### <Example of Dispaly>

< S T A T U S >		F A I L U R E	
B L O C K		- - - M - R - -	

(Display menu)	BLOCK	AEGMPRSFam
M1,IC#	876543	
I/F,M1	↔	M2,S,B
M2,IC#	7654321	

The block name or IC Ref.  
No. sending fail signal is displayed.)

### ⑪ **ENTER** Key

Used to execute the adjustment mode and the memory function mode. When a mode is displayed, it is necessary to press the **ENTER** key in order to execute that mode.

### <Example of Display>

< V I D E O >		E X
Y e s : E N T	N o : O T H E R	

When operating the mode, press the **ENTER** key, or otherwise, press other key.

### • /ESC (Escape)

Use this function when adjustment becomes impossible or if you are not sure of the proper adjustment procedure. When **ENTER** is pressed while **SHIFT** is held down the remote controller resets to initial state.

### ⑫ **SG SEL** Key

Used for switching the built-in test pattern signal. It can also be used to select the signal supplied from an external device. Press the **SG SEL** key to sequentially display the test patterns. In the adjustment mode the test pattern symbol is indicated in the upper right corner of the LCD display.

### • /INVERSE

This gives an inverting signal to the built-in test pattern which can be used in the INVERT mode. Press the **SG SEL** key while holding the **SHIFT** key.

H1 (Crosshatch)	↔	h1 (Crosshatch 1 inverting)
D1 (Dot 1)	↔	d1 (Dot 1 inverting)
H2 (Crosshatch 2)	↔	h2 (Crosshatch 2 inverting)
D2 (Dot 2)	↔	d2 (Dot 2 inverting)
WH (White)	↔	BL (Black)
BL (Black)	↔	WH (White)
GR (Gray)		Do not exist
EX (External signal)		Do not exist

**(13) [CURSOR] key**

Used to move adjustment point.

To move adjusting points press one of the OPERATE keys (**[<], [>], [&], [<]**) while holding down the **[CURSOR]** key.

In the focus and convergence COAR1 modes the adjusting points will move automatically each time the **[CURSOR]** key is pressed.

For the order of movement refer to page 75.

**• /CURSOR ON-OFF**

Press the desired mode key while holding this key when selecting the memory function mode, signal inverting, cursor display ON/OFF, ALD, etc.

**(14) [SHIFT] key**

Used to turn the cursor display ON and OFF.

Press the **[CURSOR]** key while holding the **[SHIFT]** key.

**<Memory Function Operating Procedure>**

The functions such as memory, resetting and clearing of the data controlled in each adjustment mode are described below.

**• /SAVE Key :**

Used to save the currently adjusted data (RAM → EEPROM) in the main unit (DDM).

To do this, press the color select mode **[RED]** key while holding the **[SHIFT]** key. By this operation the data of each adjustment mode is saved simultaneously. After saving, the information on the display will be as shown below in Example of Display.

**Note :** This operation must be performed individually for each adjustment mode. For example, when adjusting white balance in the VIDEO mode, save the data before moving on to another mode.

**<Example of Display>**

< V I D E O >		S A V E D ! !
S e l e c t	n e x t	M O D E

Save completed message

**• /CLEAR Key :**

The currently adjusted data is cleared, and the function of the mode is placed in the non-compensation state.

Press the color select mode **[BLUE]** key while holding the **[SHIFT]** key.

After clearing, the display will be as shown below for about two seconds, and then the display will return to the previous adjustment mode.

**<Example of Display>**

< V I D E O >	C L E A R	C O M P L E T E D
---------------	-----------	-------------------

**Note :** In the FOCUS and CONV modes, the clear function is performed under each adjustment. Therefore, the desired adjustment option must be specified by pressing the OPERATE keys (**[<], [>]**) before executing the clear operation.

To clear all data for each adjustment mode, select "ALL DATA" in the mode. After executing the clear operation, the display becomes the same as for other modes. And after about 2 seconds, the display automatically returns to the adjustment mode it was before executing the clear operation.

**<Example of Display>**

Adjustment menu to clear

S P O T	A X I S
Y e s : E N T	N e x t : >

**• /RESET Key :**

Used to reset the currently adjusted data (EEPROM → RAM) in the monitor.

Press the color select mode **[GREEN]** key while holding the **[SHIFT]** key.

This is used for restoring the original condition after clearing the data.

**Note :** In the FOCUS and CONV modes, the adjustment option to be reset must be specified before executing the reset operation by pressing the OPERATE keys (**[<], [>]**). Select "ALL DATA" to reset all adjustment options.

#### 4-3. INSTALLATION ADJUSTMENT

Perform if magnetic influence caused by changing the installation place affects the display adjustment as follows.

- Landing adjustment....Refer to page 77.
- V.CENT and H.CENT adjustments....Adjust the control on the front panel.
- Convergence ....Refer to page 78.
- Picture distortion adjustments....Refer to page 84.

#### 4-4. ADJUSTMENT AFTER REPLACING THE CRT

After replacing the CRT, be sure to perform the following adjustments.

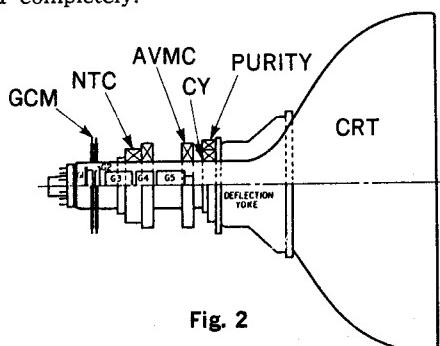
1. Landing adjustment ..... Refer to page 77
2. Convergence adjustment ..... Refer to page 78
3. Focus adjustment (Beam spot adjustment) ..... Refer to page 81
4. Screen voltage adjustment.....Refer to page 82
5. White balance adjustment ..... Refer to page 82
6. Picture distortion .....Refer to page 84
7. H STAT VR adjustment ..... Refer to page 87

**Note :** The neck assembly (deflection yoke, alignment coil, alignment magnet) is assembled together with the CRT and is supplied as a component with preadjusted CRT characteristics. Consequently, it is not necessary to perform the neck assembly parts adjustment.

##### [Deflection Yoke Installing Method and Adjustment]

In case the neck assembly has moved, perform the following adjustment.

- (1) Set the BRIGHT control to the center click position and the CONTRAST control to maximum. Turn on the power and warm up the unit for about 30 minutes or more while displaying green on the screen.
- (2) Push and bring the deflection yoke into contact with the CRT completely.



- (3) Confirm that the neck assembly is installed as shown in the Fig. 2.
- (4) Select the PURITY key in the adjustment mode.
- (5) Display the cursor on the center of the screen and turn on the degauss switch of the remote controller.
- (6) Set to green only using the R,G,B keys of the remote controller, and adjust with the ( $\ll$ ,  $\gg$ ) keys so that green is in the center of the screen. (Fig. 3)

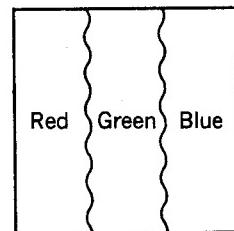


Fig. 3

- (7) Back out the deflection yoke slowly and stop when a uniform green is achieved on the screen.
- (8) Next, set to red only.
- (9) Perform the adjustment for a uniform red on the screen using the ( $\ll$ ,  $\gg$ ) keys.
- (10) Similarly perform adjustment for uniform blue on the screen using the ( $\ll$ ,  $\gg$ ) keys.
- (11) Confirm that the landing of red, green and blue is correctly adjusted. If mislanding is observed, repeat steps (5) through (10) again.
- (12) Tighten the deflection yoke. (Fig. 4)
- (13) If the vertical convergence is not adjusted correctly on the X-axis, tilt the deflection yoke and insert the wedge-shaped deflection yoke spacer. (Fig. 4)

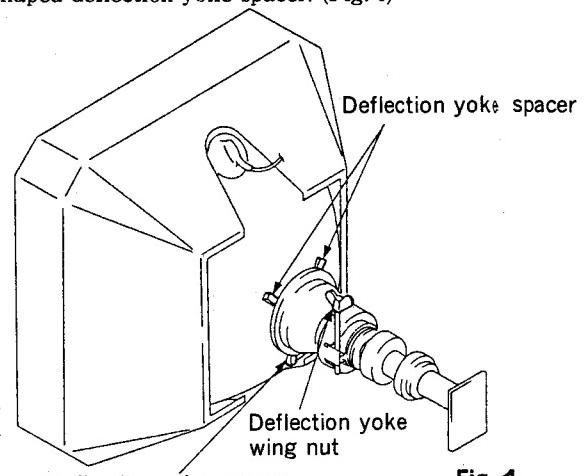


Fig. 4

- (14) Confirm that the raster is not tilted.

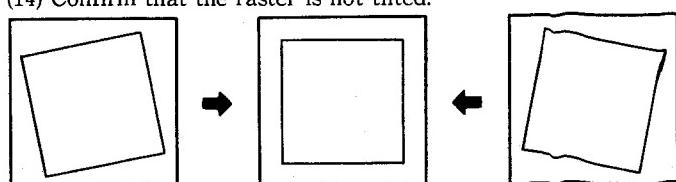


Fig. 5

#### 4-5. ADJUSTMENT AFTER REPLACING A BLOCK

After replacing the following blocks, be sure to perform the adjustments and/or checks as shown below.

Replaced Block	Required Adjustment or Checks	Reference Page
A board	• White balance adjustment	See page 82
B board		
E board	• Picture distortion adjustment (H.SIZE adjustment) (H CENT adjustment)	See page 84
G board	• Output voltage checks	Safety related adjustment (See page 88)
M1 board	• Adjustment after replacing the CRT (Note)	Safety related adjustment (See page 75)
P board	• High voltage adjustment	Safety related adjustment (See page 87)
R board	• H STAT VR adjustment • H direction convergence adjustment • FOCUS, AQP, DQP adjustment	See page 87 See page 79 See page 81
S board	• V direction convergence adjustment • Landing adjustment	See page 80 See page 77
HV Block	• High voltage adjustment • H.STAT VR adjustment	Safety related adjustment (See page 88) See page 87

**Note :** New M1 boards have no adjustment data in their EEPROM.

Therefore, readjustment is necessary following the procedures detailed under "ADJUSTMENT AFTER REPLACING THE CRT".

If the EEPROM from the previous board is remounted onto a new M1 board at the same time, readjusting is not required.

## 4-6. ADJUSTMENT

### 4-6-1. LANDING ADJUSTMENT

- Check raster center

1. Select Cross hatch 1 mode by the [SG SEL] key and confirm that the horizontal position of the picture is located at the center.

**Note :** By switching the internal and external input signals, a difference between the signal timing may occur causing the horizontal position of the picture to deviate.

2. If it is not displayed at the center, select the CENT mode by the [GEOM] key in the adjustment mode and adjust with the [ $\ll$ ,  $\gg$ ] keys. After the adjustment, save the data.

- Select [PURITY] or ALD in the adjustment mode when performing the landing adjustment.

**Note :** When adjusting in the ALD mode, the optional landing sensor (DDM LS10) is used.

#### [Landing AUTO Adjustment]

1. The screen can be made all an white Pattern by using the [SG SEL] key, and can be change to green by the [R], [G], [B] keys.
2. Degauss the screen by pressing the DEGAUSS switch (front panel), and warm the unit up for 30 minutes or more.
3. Connect the landing sensor to the landing sensor terminal at the rear of the unit.
4. Select the ALD of the adjustment mode. At this time, the degaussing operation works automatically, so wait for about 8 seconds until it is completed.
5. Bring the landing sensor into contact with the portion where the cursor is displayed at the center of the screen and click the button on the landing sensor. The cursor will move automatically from [1] to [7] in sequence as shown in Fig.5, so repeat the adjustment seven times in the same manner.

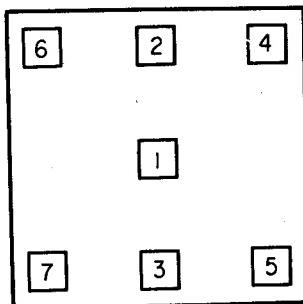


Fig. 6

6. Confirm that the screen is uniformly green.
7. Similarly confirm for red and blue.
8. If mislanding is observed, repeat steps 5 through 7 again.
9. After the adjustment, the data is saved automatically.
10. Select the 1.CENT mode by GEOM adjustment mode and adjust H.CENT (horizontal centering) with the [ $\ll$ ,  $\gg$ ] keys.
11. After the adjustment, SAVE the data.

**Note :** If the landing adjustment can not be performed by AUTO adjustment, perform manual adjustment as described below.

#### [Manual Landing Adjustment]

1. The screen is green. Degauss by pressing the degauss switch, and warm the unit up for 30 minutes or more.
2. Select "PURITY" in the adjustment mode.
3. Move the cursor to the center of the screen.
4. Adjust green at the center of the screen (position [1]) with the [ $\ll$ ,  $\gg$ ] keys to maximum brightness.
5. While moving the cursor from [1] to [7] in sequence, perform the landing adjustment as explained above. (Fig.7)

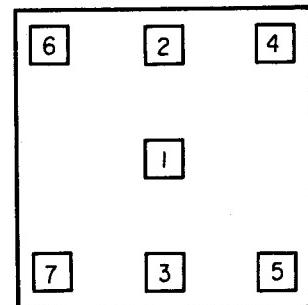


Fig. 7

6. Confirm that the screen is uniformly green.
7. Similarly confirm for red and blue.
8. After the adjustment, SAVE the data.
9. Select the CENT setting of the GEOM adjustment mode and adjust the H.CENT (horizontal centering) with the [ $\ll$ ,  $\gg$ ] keys.
10. After the adjustment, SAVE the data.

#### 4-6-2. Convergence Adjustment

- Perform H.STAT VR adjustment for the HV block. (See page 84)
- There are two adjustment modes for adjusting convergence.

##### COARSE mode

COAR1 mode ....cursor automatic mode 5x5 points  
adjustment

COAR2 mode ....cursor manual mode 5x5 points  
adjustment

FINE mode .....17×17 points adjustment

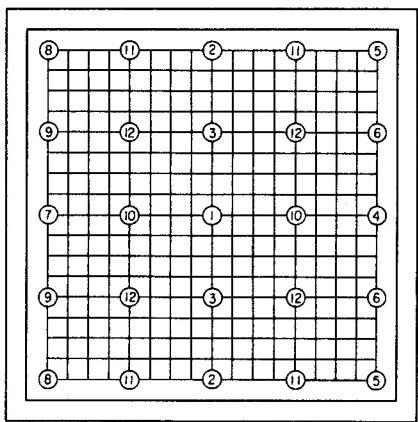
##### [COARSE Adjustment]

1. Warm up the unit for 30 minutes or more.
2. Set the H.STAT and V.STAT controls on the front panel to the center click position.
3. Select the COAR1 OR COAR2 setting of the CONV adjustment mode.
4. The cross hatch 1 is automatically selected.

**Note:** At this time, H.STAT and V.STAT controls on the front panel are inoperative.

5. Adjust all points in the number order indicated below (5×5 points, ①→⑯). Some points have equivalent numbers.

**<5×5 points adjustment>**



**Fig. 8**

6. Convergence adjustment procedure. Move the cursor in the order of ① through ⑯ and adjust the convergence at each point.
  - 6-1. Move the red and blue beams symmetrically in the horizontal direction with the [ $\leftarrow$ ], [ $\rightarrow$ ] keys.
  - 6-2. Move the red and blue beams symmetrically in the vertical direction with the [ $\uparrow$ ], [ $\downarrow$ ] keys.
  - 6-3. Move the blue beam only in the horizontal direction with the [SHIFT] + [ $\leftarrow$ ], [ $\rightarrow$ ] keys.

- 6-4. Use the [SHIFT] + [ $\uparrow$ ], [ $\downarrow$ ] keys to simultaneously move both the red and blue beams along the center Y-axis (①, ② and ③ adjustment points) in the same vertical direction. At all other adjustment points, only the blue beam can be moved.

7. After adjustment, SAVE the data.

**Note:** Set the unit to another adjustment mode and confirm the convergence. When the convergence at the center of the screen deviates, adjust the H.STAT and V. STAT on the control section of the front panel.

##### [FINE Adjustment]

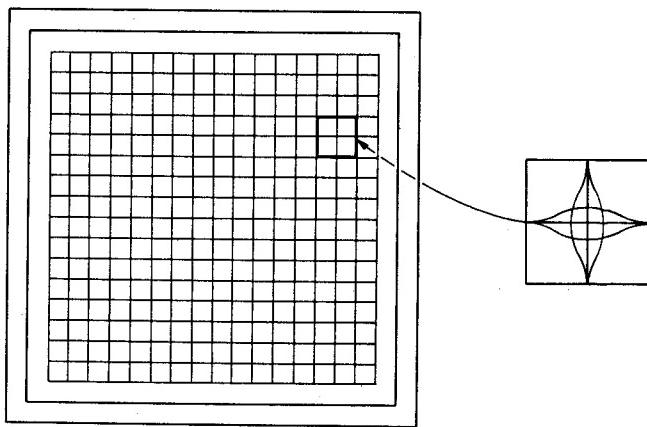
1. More than 30 minutes is required to warm up the unit.
2. Select the FINE setting of the CONV adjustment mode.

**Note:** Set H.STAT and V.STAT on the front control section to the center click position.

3. Any intersection (17×17 points) of the cross hatch can be used for adjustment.

**Note:** It is desirable to perform the adjustment mostly in COARSE mode, using the FINE mode for minute adjustment only.

**<Convergence Movement in FINE Adjustment>**



**Fig. 9**

4. After adjustment, SAVE the data.

**Note:** H.STAT and V.STAT user controls do not operate in the CONV adjustment mode.

〈Convergence Movement at Each Point in the Horizontal Direction〉

〈5×5 point adjustment〉

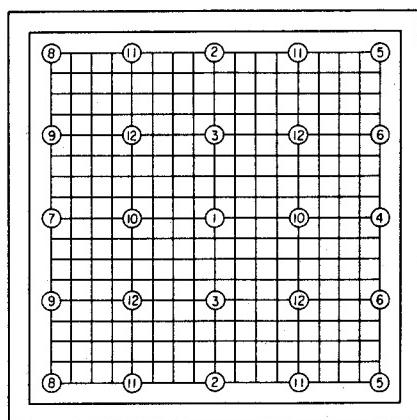
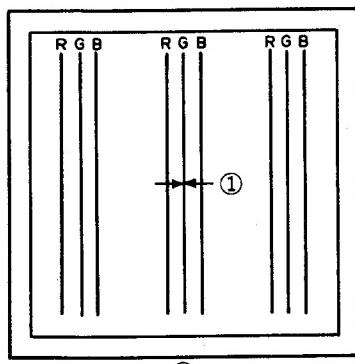
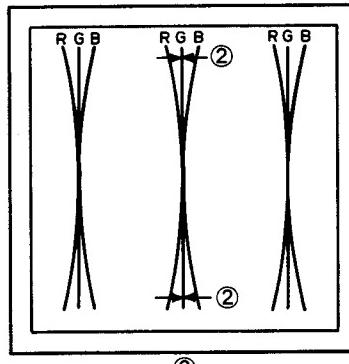


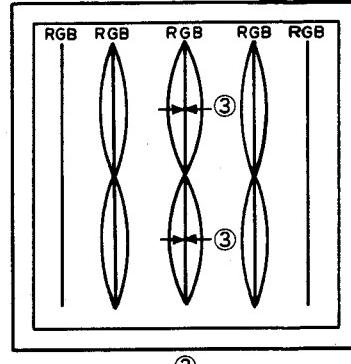
Fig. 10



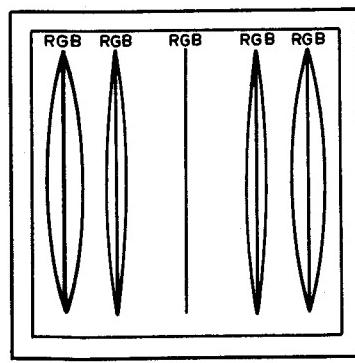
①



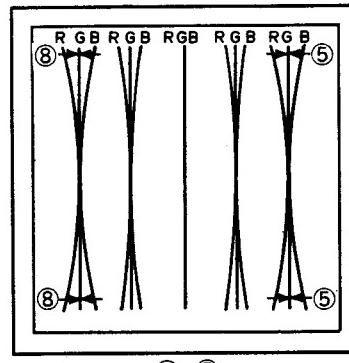
②



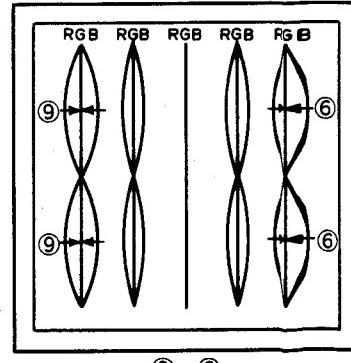
③



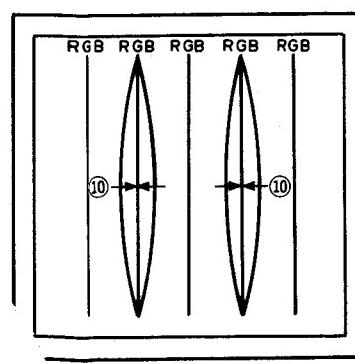
④



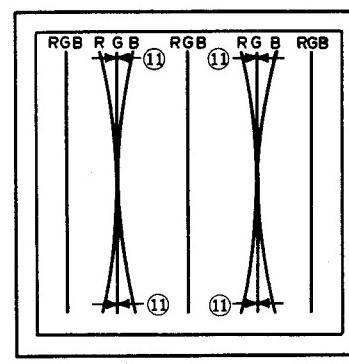
⑤



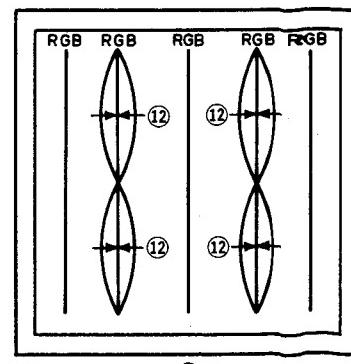
⑥



⑩



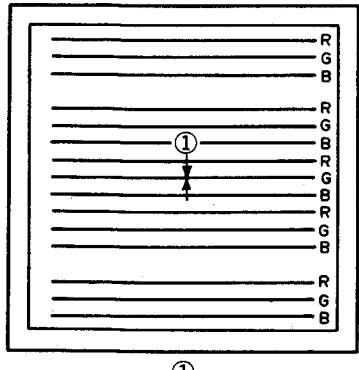
⑪



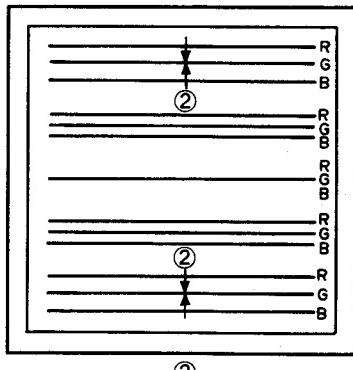
⑫

Fig. 11

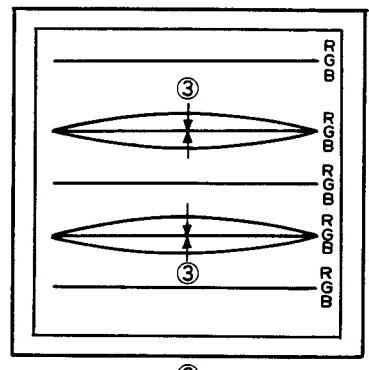
〈Convergence Movement of Each Point in the Vertical Direction〉



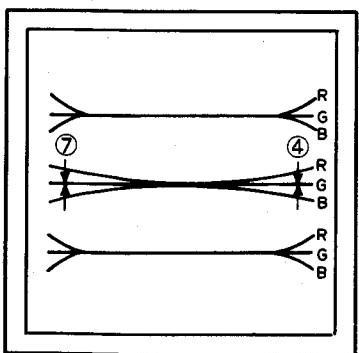
①



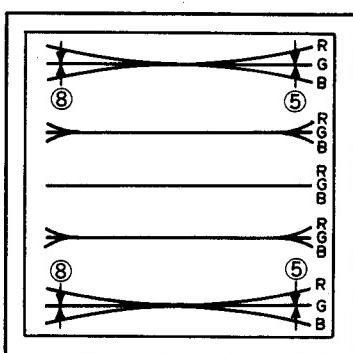
②



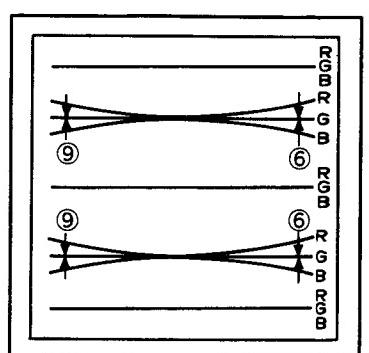
③



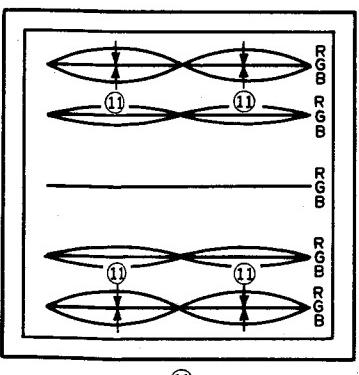
⑦ ④



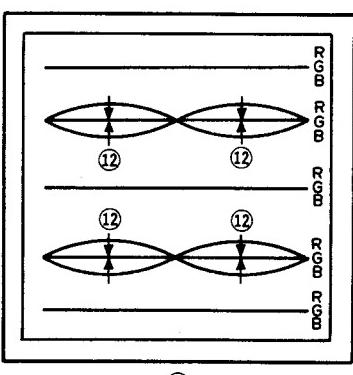
⑧ ⑤



⑨ ⑥



⑪



⑫

Fig. 12

#### 4-6-3. Focus Adjustment

- There are two focus adjustment methods :

COARSE mode

COAR1 mode .... cursor automatic mode  $5 \times 5$  points  
adjustment

COAR2 mode .... cursor manual mode  $5 \times 5$  points  
adjustment

FINE mode .....  $17 \times 17$  points adjustment

- Contents of the adjustment :

1. FOCUS :

CRT's focus voltage adjustment :  $\llcorner, \lrcorner$

2. AQP (Axis Quadrupole) :

Axial beam spot shape : [SHIFT] +  $\wedge, \vee$

3. DQP (Diagonal Quadrupole) :

Diagonal beam spot shape : [SHIFT] +  $\llcorner, \lrcorner$

**[Coarse Adjustment]**

1. Select the COAR1 or COAR2 setting of the FOCUS adjustment mode.
2. Cross hatch 2 and Dot 2 modes are automatically selected by pressing the [SG SEL] key.
3. The allocation of adjustment points ( $5 \times 5$  points) and the adjustment sequence (① to ⑯) are shown in the figure below.

**Note :** Display the cursor if necessary.

1. If too much data is stored at one point, it may be difficult to adjust adjacent points.
2. At point ①, move the focus voltage range over a wide area, and observe the other points.
  - For points which pass through good focus and beam shape .... FOCUS adjustment only is required.
  - For points which do not show good beam shape at best focus position .... AQP and/or DQP adjustment is required in conjunction with focus.
3. Do not adjust the focus at one time. Perform the focus adjustment gradually in 2 or 3 steps.

< $5 \times 5$  points adjustment>

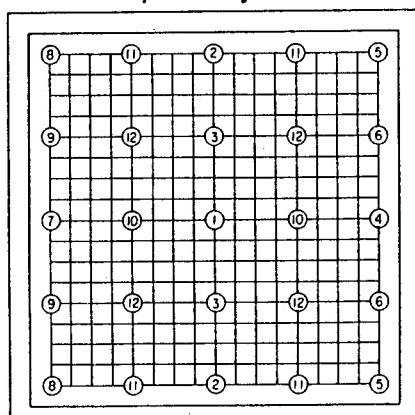
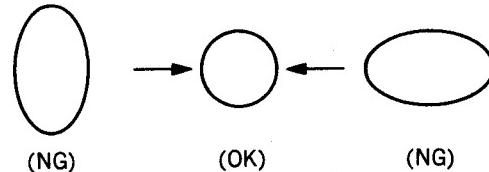
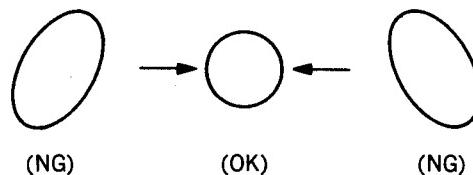


Fig. 13

5. Perform focus voltage adjustment gradually in the ① to ⑯ order ( $\llcorner, \lrcorner$ ).
6. Perform AQP adjustment in the ① to ⑯ order to compensate for the beam spot shape.



7. Perform DQP adjustment in the ① to ⑯ order to compensate for the beam spot shape.



8. Be sure to perform adjustment of steps 5 to 7 while adjusting the tracking.
9. After adjustment, SAVE the data.
10. When there are points that can not be adjusted in COAR1 or COAR2 mode, adjust in FINE adjustment mode.

**[Fine Adjustment]**

1. Select the FINE setting of the FOCUS adjustment mode.
2. Any intersection ( $17 \times 17$  points) can be used for adjustment. ( $\llcorner, \lrcorner$ )

**Note :** It is best to perform the adjustment mostly in COARSE mode.

3. After the adjustment, SAVE the data.

#### 4-6-4. Video Adjustment

Confirm the following items :

1. Confirm  $V_{GG}$  voltage.
  - 1-1. Confirm that TP7(VGG) of the R,G,B voltage on the A board is  $10.0 \pm 0.1$  Vdc.
  - 1-2. If the voltage is out of the specified value, adjust to  $10.0 \pm 0.1$  Vdc with the A board RV2.
2. Confirm the Cathode Bias voltage.
  - 2-1. Select the BLACK internal signal selection mode and display an all-black signal on the screen.
  - 2-2. Connect the oscilloscope to the A1 terminal (junction with AB board) on the AA board, and confirm that the voltage is  $65.0 \pm 1.0$  Vdc.
  - 2-3. If the voltage is out of the specified value, adjust to  $65.0 \pm 1.0$  Vdc with the A board RV1.

After confirmation of the above items, perform the black level (screen voltage) adjustment, BKG adjustment, and white balance adjustment.

##### Types of Adjustment

<b>Automatic adjustment</b>	<b>Initial Mode</b>	Performs the automatic adjustment so that the beam current of the black level of R,G,B channel is $0.05\mu A$ , and set the contrast maximum of the white current to $280\mu A$ , contrast minimum level to about $25\mu A$ , and memorize this data.
	<b>Auto Set-up Mode</b>	Reads the backup data of the monitor, and readjusts the white level and black level of the monitor in accordance with this data.
	<b>Measurement Memory Mode</b>	Measures the beam current of the manually adjusted white level using the video mode, and memorizes this data.
	<b>Manual Adjustment</b>	Adjust the level (brightness) or balance (color) in the Max. and Min. of R,G,B channel contrast.

##### [Screen Voltage and BKG Adjustment]

- Adjust by using the automatic adjustment and initial mode.
1. When selecting the initial mode, the monitor checks the screen voltage automatically. If it is OK, perform the BKG automatic adjustment ( $\Delta I_k \geq 50nA$ ), and set the Min. and Max. contrast properly (uniformed current value), and save data.
  2. If the screen voltage is NG, the controller is turned to the screen volume mode automatically.

Warning! G2 high  
Adj SCRN volt

The screen voltage is too high. Turn down the screen volume (turn counter clockwise).

Warning! G2 low  
Adj SCRN volt

The screen voltage is too low. Turn up the screen volume (turn clockwise).

AWB > G2 good  
PUSH ENTER Key

Shows the screen voltage is proper.

After confirmation that the screen voltage is good, press the **ENTER** key. Then, it will return to activate 1 automatically and perform the adjustment.

For these adjustments, the G1 voltage of the channel (R,G or B) which is the deepest cut-off, is set to approximately  $-35V$ , and the black level current of each channel is set to approximately  $0.05\mu A$ .

##### [White Balance Adjustment]

- Perform by manual adjustment.
- Perform after screen voltage adjustment and BKG adjustment.

Input of a video signal of  $0.714V_{p-p}$  from an external signal generator is required for precise brightness and color adjustment. If the external signal generator is not installed, use of the internal signal is acceptable.

1. Select VIDEO in the adjustment mode.
2. Turns to All White automatically.
3. Adjust by the color analyzer so that the color may be  $x = 0.271$ ,  $y = 0.286$ , and the brightness is  $Y = 90 \pm 2$  NIT, by R. CONT MAX, G.CONT MAX, B.CONT MAX, which are in the adjustment mode. (, )
4. Adjust by the color analyzer so that the color may be  $x = 0.271$ ,  $y = 0.286$ , and the brightness is  $Y = 6.5 \pm 0.5$  NIT, by R. CONT MIN, G.CONT MIN, B.CONT MIN, which are in the adjustment mode. (, )
5. After finishing all the adjustment (screen voltage adjustment, BKG adjustment, white balance adjustment), save the data.

**Note:** CONTRAST and BRIGHTNESS controls do not operate in the VIDEO mode.

**[Measurement Memory Mode]**

After the video adjustment, be sure to memorize the beam current condition of each R,G,B channel by the measurement memory mode of AWB. Using the all white internal signal, measure the beam current of Max. and Min. of R,G,B channel contrast, and memorize them.

1. While pressing the [SHIFT], press the [VIDEO] (AWB).
2. Select and perform the measurement and memory mode.
3. Automatically, the data is saved.

**[Auto Set-up Mode]**

When the white balance and black level is distorted, caused by the gradual and slight degradation and drift of the CRT, readjustment can be performed by operating the auto setup mode of the automatic adjustment.

1. While pressing the [SHIFT], press the [VIDEO] (AWB).
2. Select the auto setup mode.
3. Automatically, the BKG adjustment and the White balance adjustment is performed, and the data is saved.

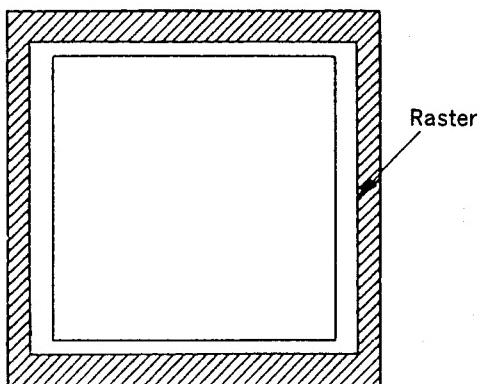
At this time, the black level beam current of the R,G,B channels is readjusted to  $0.05\mu A$ , and the brightness of contrast Max. and Min. is readjusted to the beam current value which was previously memorized by the measurement memory mode.

4. When the adjustment in the auto set-up mode can not be performed, caused by the marked degradation of the CRT, the message that the adjustment of the screen voltage is not proper will appear, the same as in the operation of the initial mode. When the screen voltage is readjusted, in the same method as in section 2 [screen voltage and BKG adjustment] in accordance with the display, the auto setup mode will be automatically performed again.

**Note :** In the auto setup mode, be sure to record the beam current data in the measurement memory mode. Otherwise, readjustment can not be performed properly.

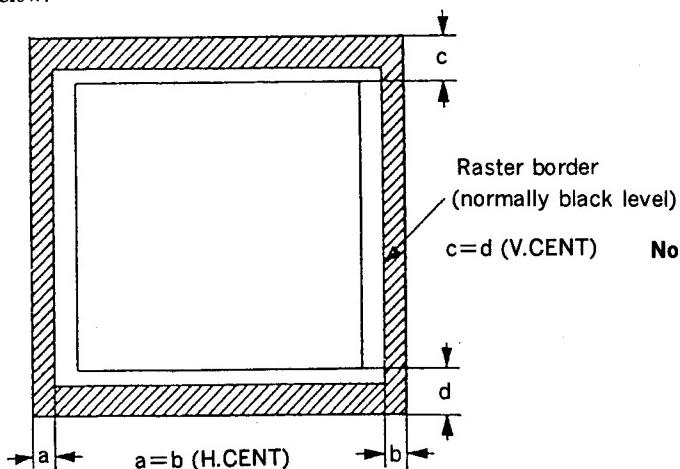
#### 4-6-5. Picture Distortion Adjustment

1. Select the GEOM adjustment mode.
2. Set the V CENT control to the click position by adjusting the monitor dial. However, when Performing GEOM adjustment, only the remote controller Keys can be used.
3. Cross hatch 1 is automatically selected. Change the screen to green by **R G B** key.
4. Select the SIZE adjustment mode and adjust with the ( $\llcorner \lrcorner$ ) keys so that the horizontal length fits within the effective picture frame.  
(Check the left and right sides of the raster.)



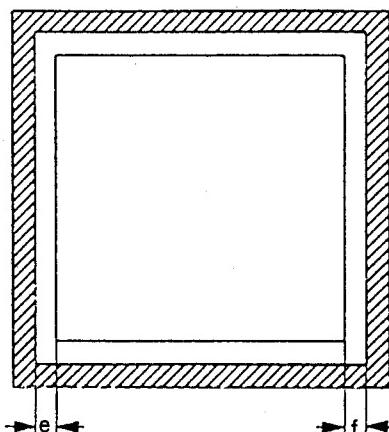
**Fig. 14**

5. Select the CENT adjustment mode and adjust with the ( $\llcorner \lrcorner, \wedge \vee$ ) keys so that V CENT is  $c=d$  ( $\wedge \vee$ ), and H CENT is  $a=b$  ( $\llcorner \lrcorner$ ) as shown in the figure below.



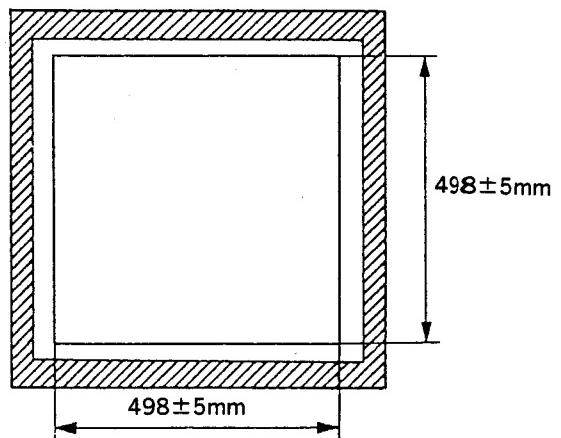
**Fig. 15**

6. Select the H PHASE adjustment mode and adjust with the ( $\llcorner \lrcorner$ ) keys so that the distance between the cross hatch and the raster portion is the same on both the left and the right sides.



**Fig. 16**

7. Select the SIZE adjustment mode and adjust with the keys so that the horizontal size and vertical size are both  $498 \pm 5\text{mm}$  ( $\llcorner \lrcorner, \wedge \vee$ ).



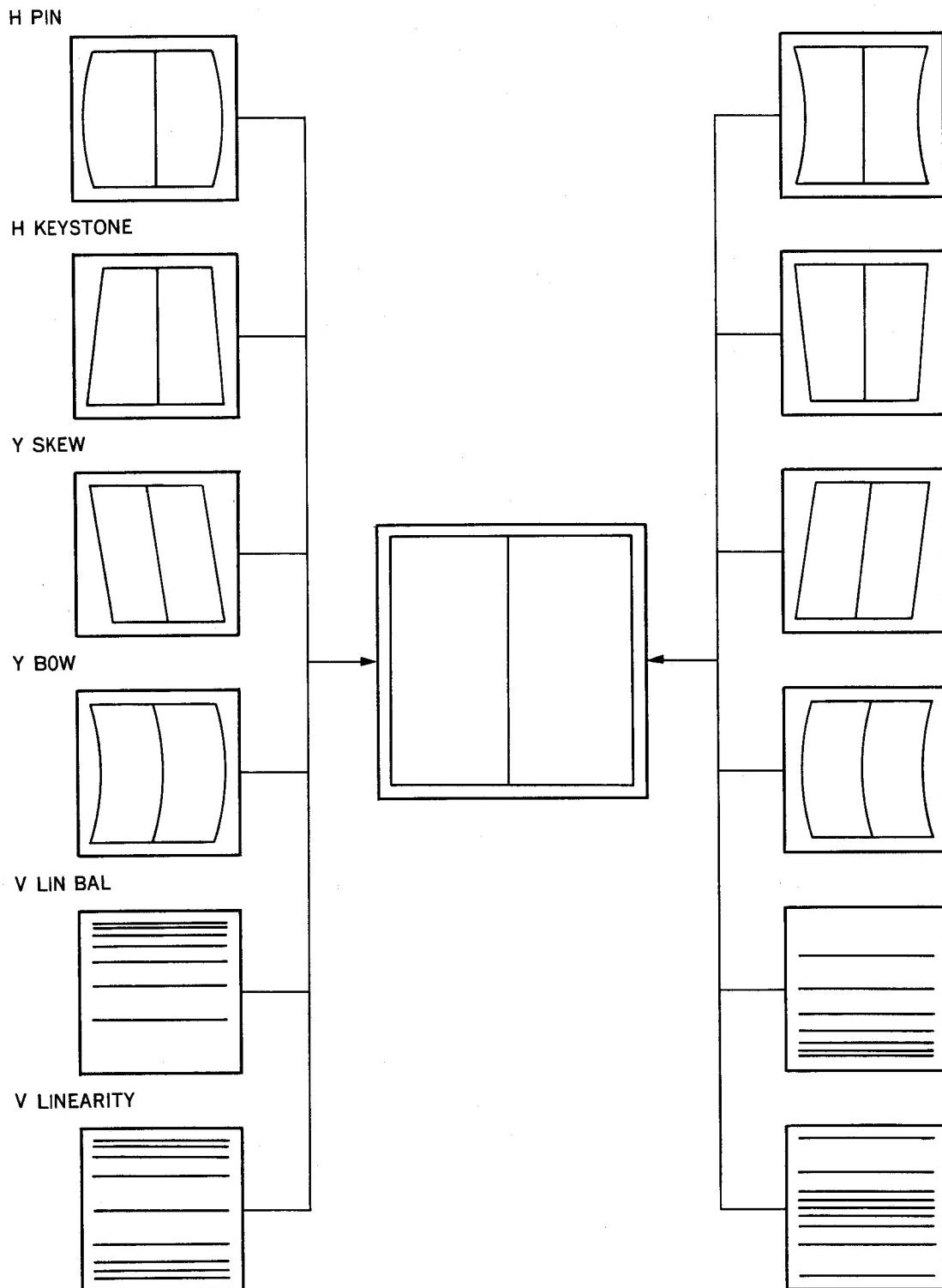
**Fig. 17**

**Note :** V.CENT of the customer control does not operate in the GEOM adjustment mode.

8. Select H PIN, H KEYSTONE, Y SKEW and Y BOW in turn and adjust with the ( $\triangleleft \triangleright$ ,  $\wedge \vee$ ) keys so that edge lines of the crosshatch are straight.

9. Select V LINEARITY and V LIN BAL in turn and adjust with the ( $\triangleleft \triangleright$ ,  $\wedge \vee$ ) keys so that the vertical lines of the cross hatch are equally spaced.

**Note :** Perform steps 7 and 8 while adjusting the tracking.



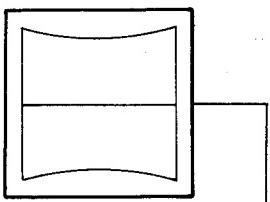
**Fig. 18**

**DDM-2801C/2802C**  
**DDM-2801C2/2802C2**

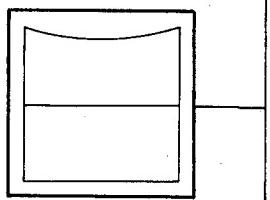
10. Select T/B PIN, T/B BAL, X BOW, T/B KEYS and T/B SKEW in turn and adjust with the ( $\ll \gg \wedge \vee$ ) keys so that the horizontal lines of the cross hatch are equally spaced.

T/B PIN

Serial No. 10055 and above

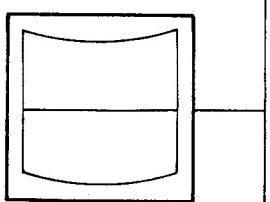


TOP PIN

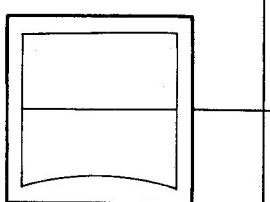


T/B BAL

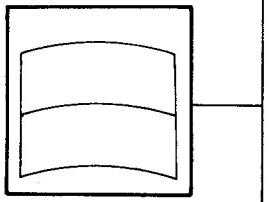
Serial No. 10055 and above



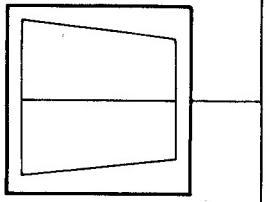
BOTTOM PIN



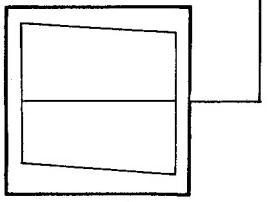
X BOW



T/B KEYS



T/B SKEW



11. After performing above adjustment, save the data.

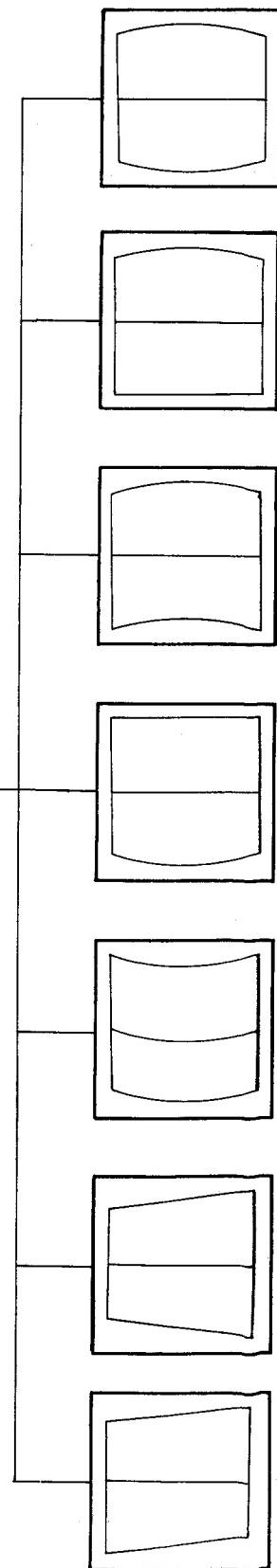


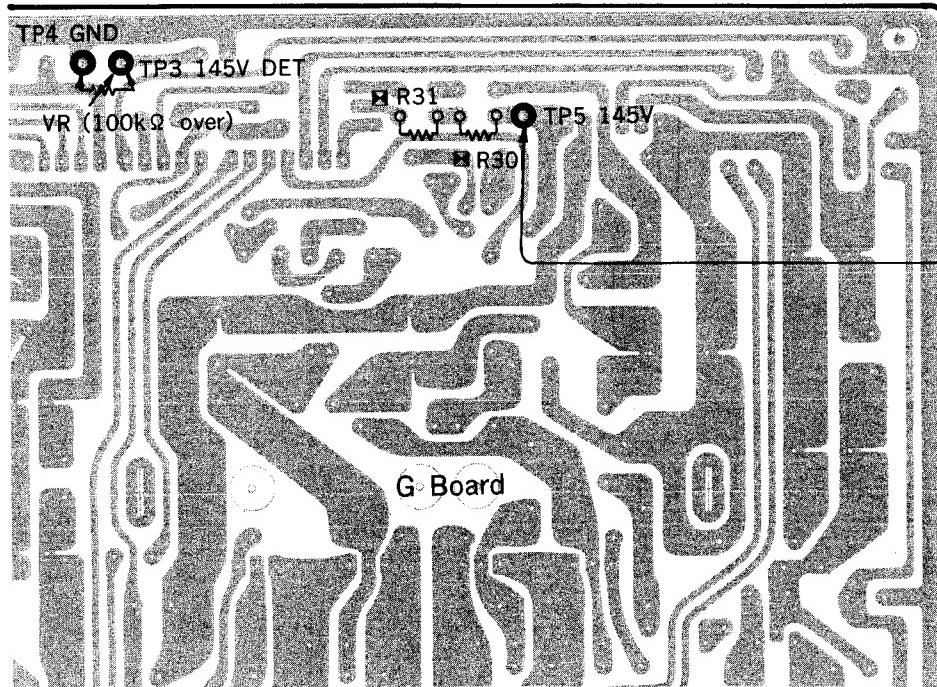
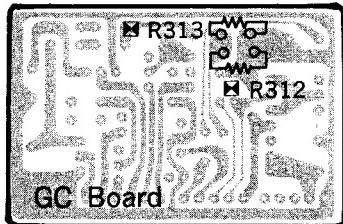
Fig. 19

#### 4-7. SAFETY RELATED ADJUSTMENT

##### +B MAX R312,R313

When replacing the following components (with  mark on the circuit diagram), be sure to confirm as follows.

- R24,R25 ..... G board
- IC101 ..... GA board
- R306, R312, R313, IC301 ..... GC board
- 1. Supply AC120V from the power supply. (NF power supply or less than 3% fluctuation)
- 2. Receive the all white signal. (controller)
- 3. CONTRAST control ..... center  
BRIGHTNESS control ..... center
- 4. Connect the digital multimeter between TP5 on the G board and the ground.
- 5. Confirm that the designation point of the digital multimeter at this time is  $145.0 \pm 1.0 \text{V}_{\text{DC}}$ .
- 6. If the specification is not satisfied, change the values of R312 and R313 until it is satisfied.



##### OPERATION CHECK OF THE OVP CIRCUIT R30,R31

When replacing the following parts (marked  on the circuit diagram), be sure to confirm as follows.

- D101,Q101,R115,R116 ..... GA board
- IC203, IC204, R213, R214, R215, R216 ..... GB board
- IC303, R309 ..... GC board
- R30, R309 ..... G board

1. Receive the all white signal.
2. CONTRAST control ..... center  
BRIGHTNESS control ..... center
3. Connect the digital multimeter between TP5 on the G board and the ground.
4. Connect the variable resistance (over  $100\text{k}\Omega$ ) between TP3 on the G board and the ground.

**Note:** Set the resistance value of the variable resistance to maximum.

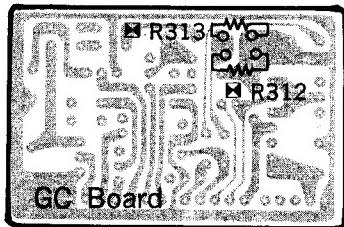
5. Turn down the variable resistor from the maximum value gradually, and when the value indicated on the digital multimeter becomes  $154.0 \pm 6.0 \text{V}_{\text{DC}}$ , confirm that the OVP circuit operates and the voltage goes down suddenly (0V), after which the picture disappears.
6. If the specification is not satisfied, change the values of R30 and R31 until it is satisfied.
7. Remove the variable resistance, and confirm that  $145.0 \pm 1.0 \text{V}_{\text{DC}}$  has been achieved.

#### 4-7. SAFETY RELATED ADJUSTMENT

##### +B MAX R312,R313

When replacing the following components (with  mark on the circuit diagram), be sure to confirm as follows.

- R24,R25 ..... G board
- IC101 ..... GA board
- R306, R312, R313, IC301 ..... GC board
- 1. Supply AC120V from the power supply. (NF power supply or less than 3% fluctuation)
- 2. Receive the all white signal. (controller)
- 3. CONTRAST control ..... center  
BRIGHTNESS control ..... center
- 4. Connect the digital multimeter between TP5 on the G board and the ground.
- 5. Confirm that the designation point of the digital multimeter at this time is  $145.0 \pm 1.0 \text{V}_{\text{DC}}$ .
- 6. If the specification is not satisfied, change the values of R312 and R313 until it is satisfied.



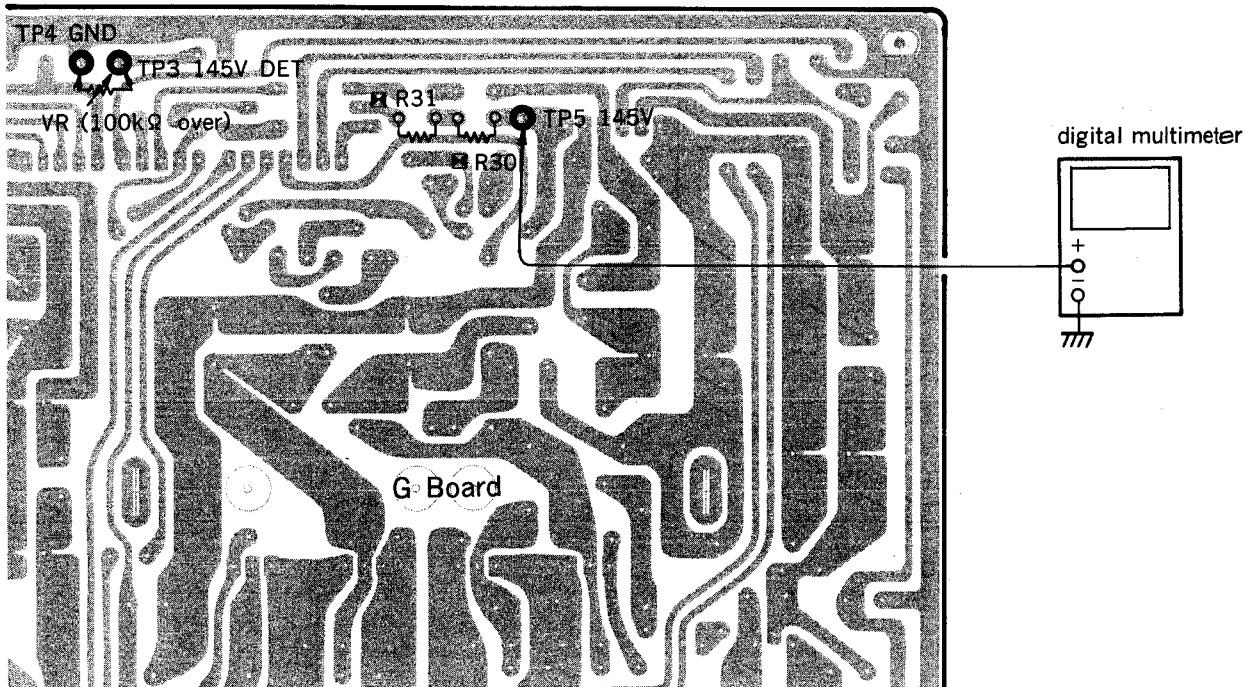
##### OPERATION CHECK OF THE OVP CIRCUIT R30,R31

When replacing the following parts (marked  on the circuit diagram), be sure to confirm as follows.

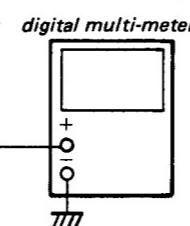
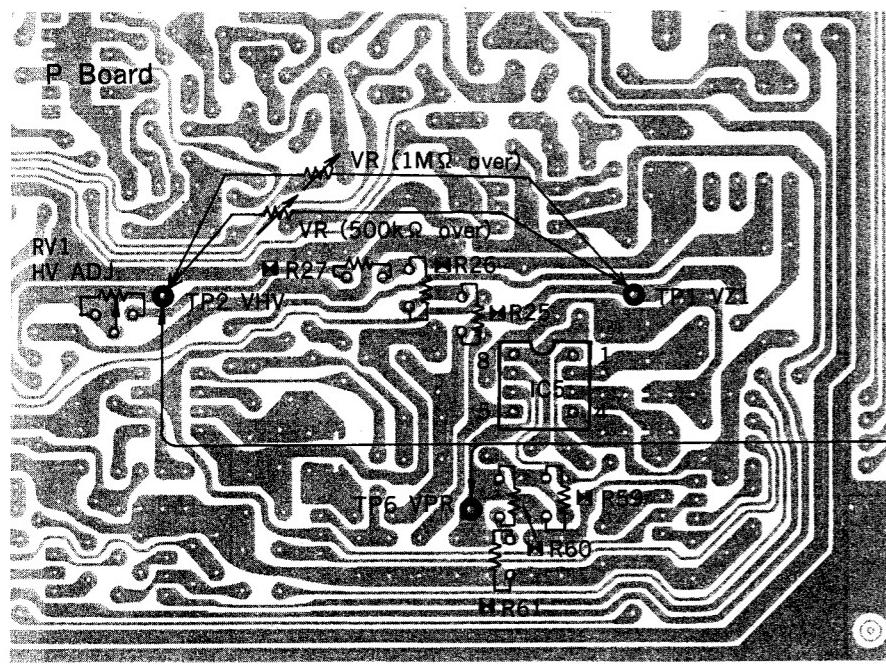
- D101,Q101,R115,R116 ..... GA board
- IC203, IC204, R213, R214, R215, R216 ..... GB board
- IC303, R309 ..... GC board
- R30, R309 ..... G board
- 1. Receive the all white signal.
- 2. CONTRAST control ..... center  
BRIGHTNESS control ..... center
- 3. Connect the digital multimeter between TP5 on the G board and the ground.
- 4. Connect the variable resistance (over  $100\text{k}\Omega$ ) between TP3 on the G board and the ground.

**Note :** Set the resistance value of the variable resistance to maximum.

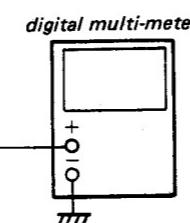
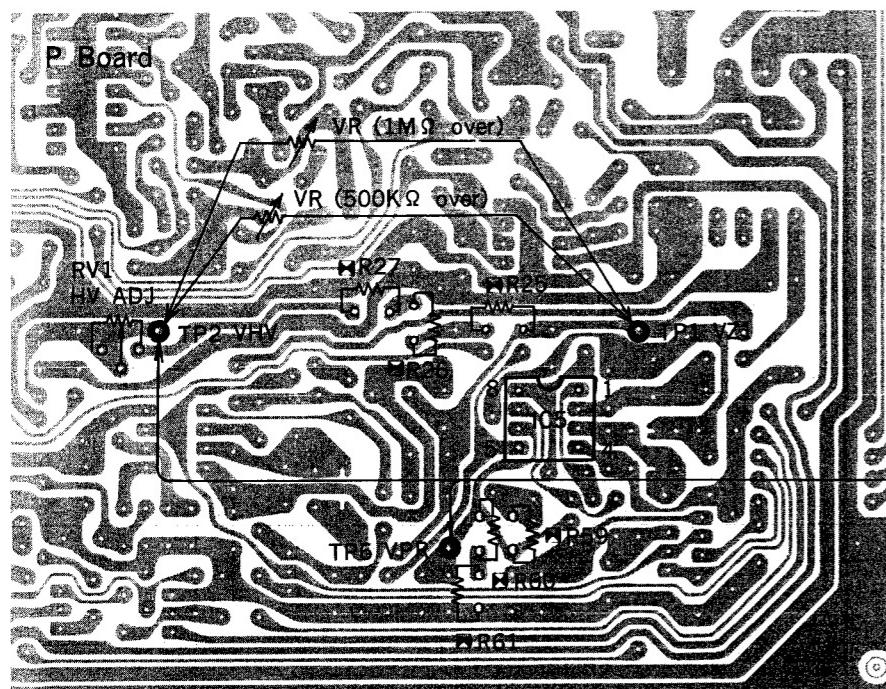
- 5. Turn down the variable resistor from the maximum value gradually, and when the value indicated on the digital multimeter becomes  $154.0 \pm 6.0 \text{V}_{\text{DC}}$ , confirm that the OVP circuit operates and the voltage goes down suddenly (0V), after which the picture disappears.
- 6. If the specification is not satisfied, change the values of R30 and R31 until it is satisfied.
- 7. Remove the variable resistance, and confirm that  $145.0 \pm 1.0 \text{V}_{\text{DC}}$  has been achieved.



1-627-362-12



1-627-362-13



**OPERATION CHECK OF THE HV REGULATOR CIRCUIT**  
**R25,R26,R27**

When replacing the following components (marked  on the circuit diagram), be sure to confirm as follows.

IC2, IC3, RV1, R23, R24, R25,  
R26, R27, R28, R29, R31, R34 ..... P board.  
HV BLOCK

**• When using a high voltage meter**

**Note :** Use a calibrated high voltage meter whose input impedance is more than  $2 \times 10^9 \Omega$

1. Receive the all white signal. (controller)
2. CONTRAST control ..... center  
BRIGHTNESS control ..... center
3. Connect the high voltage meter to the CRT anode.
4. Turn RV1 (HV ADJ) on the P board fully clockwise, and confirm that the value indicated on the high voltage meter is  $29.98 \pm 0.07 \text{ kV}$  at this time.
5. If the specification is not satisfied, change the values of R25, R26, R27 until it is satisfied.
6. After checking, adjust so that the anode voltage becomes  $29.90 \pm 0.08 \text{ kV}$  at RV1 on the P board.

**• When not using a high voltage meter (When using a digital multimeter).**

1. Receive all white signal. (with the controller)
2. CONTRAST control ..... center  
BRIGHTNESS control ..... center
3. Connect the digital multimeter between TP2 on the P board and the ground.
4. Turn RV1 (HV ADJ) on the P board fully clockwise.
5. Confirm that the value indicated on the digital multimeter becomes  $7.046 \pm 0.15 \text{ V}$ .
6. If the specification is not satisfied, change the values of R25, R26, R27 until it is satisfied.

**OPERATION CHECK OF THE HV HOLD DOWN CIRCUIT**  
**R59,R60,R61**

When replacing the following components (marked  on the circuit diagram), be sure to confirm as follows.

IC4, IC5, D16, R37, R38, R57  
R58, R59, R60, R61, R62, R63, R96 ..... P board  
HV BLOCK

**• When using a high voltage meter**

1. Receive the all white signal. (controller)
2. CONTRAST control ..... center  
BRIGHTNESS control ..... center
3. Connect the high voltage meter to the CRT anode.
4. Connect the digital multimeter between TP6 (VPR) on the P board and the ground.
5. Select the resistance values of R59, R60 and R61 so that the value indicated on the digital multimeter becomes  $10.43 \pm 0.10 \text{ V}_{\text{DC}}$ .
6. Connect the variable resistance (over  $1M\Omega$ ) between TP1 (VZ) on the P board and TP2 (VHV).

**Note :** Set the resistance value of the variable resistor to maximum in advance.

7. Lower the variable resistance gradually from the maximum value gradually. Increase the anode voltage and when the electrostatic voltmeter reading is  $31.30 \text{ kV} \pm 0.70 \text{ kV}_{\text{DC}}$ , confirm that the HV hold down circuit operates, the voltage goes down suddenly (0V) and the picture disappears.

**• When not using the high voltage meter.**

- (When using a digital multimeter)
1. Receive the all white signal. (controller)
  2. CONTRAST control ..... center  
BRIGHTNESS control ..... center
  3. Connect the digital multimeter between TP6 (VPR) on the P board and the ground.
  4. Adjust the resistance values of R59, R60 and R61 so that the value indicated on the digital multimeter becomes  $10.27 \pm 0.12 \text{ V}_{\text{DC}}$ .
  5. Connect the variable resistor (over  $500\text{k}\Omega$ ) between TP1 (VZ) and TP2 (VHV).

**Note :** Set the resistance value of the variable resistor to maximum in advance.

6. Lower the variable resistance gradually from the maximum value and increase the anode voltage. When the voltage of pin ⑤ of IC5 on the P board is equivalent to that of TP6, confirm that the picture disappears.

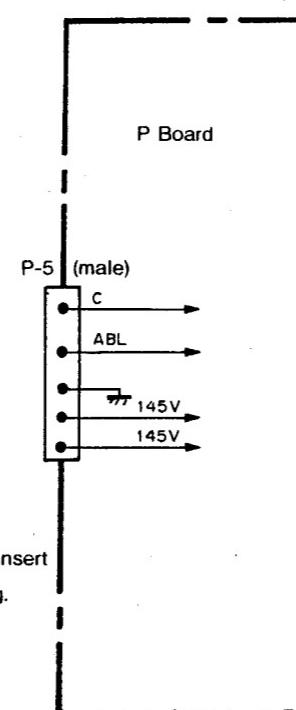
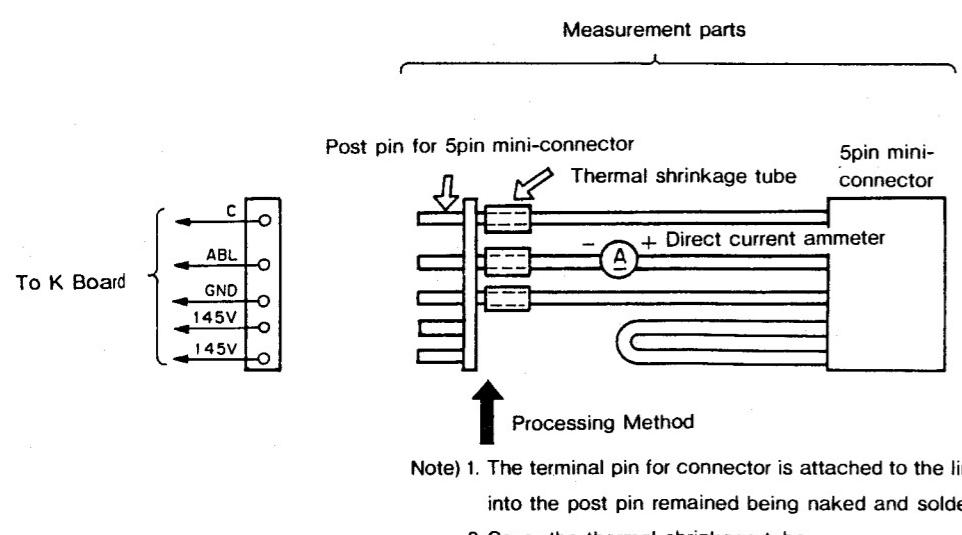
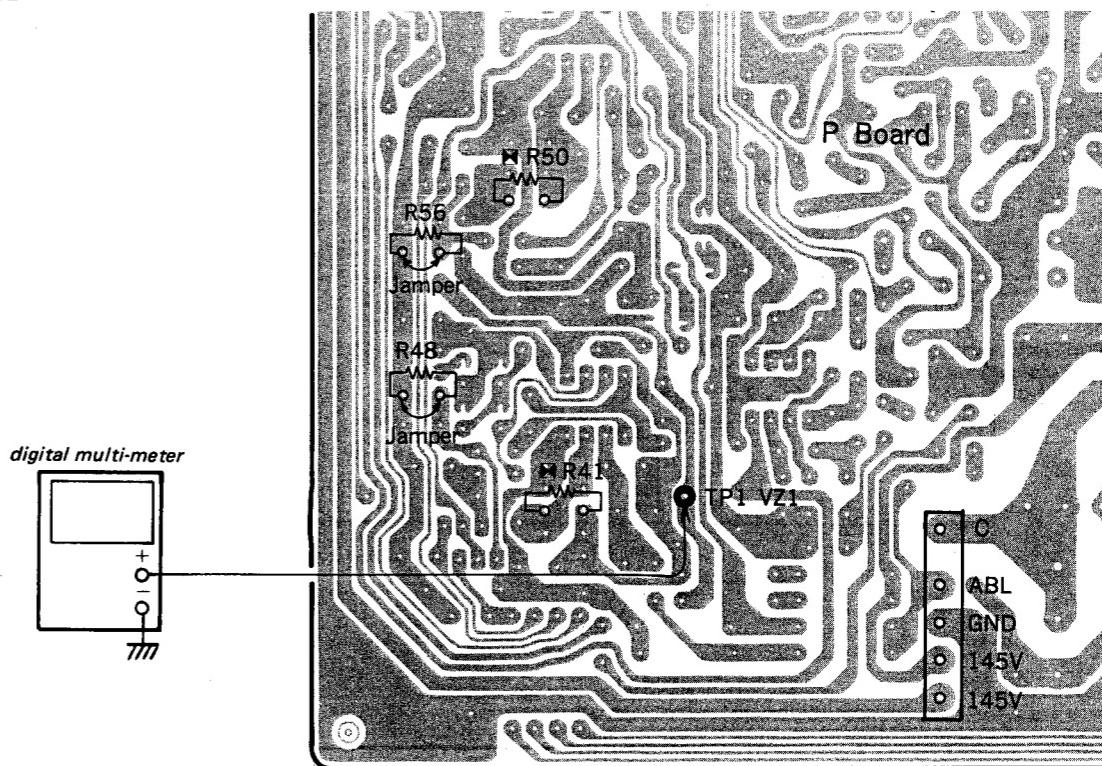
**OPERATION CHECK OF THE CURRENT PROTECTOR ONE CIRCUIT □ R41**

When replacing the following components (marked □ on the circuit diagram), be sure to confirm as follows.

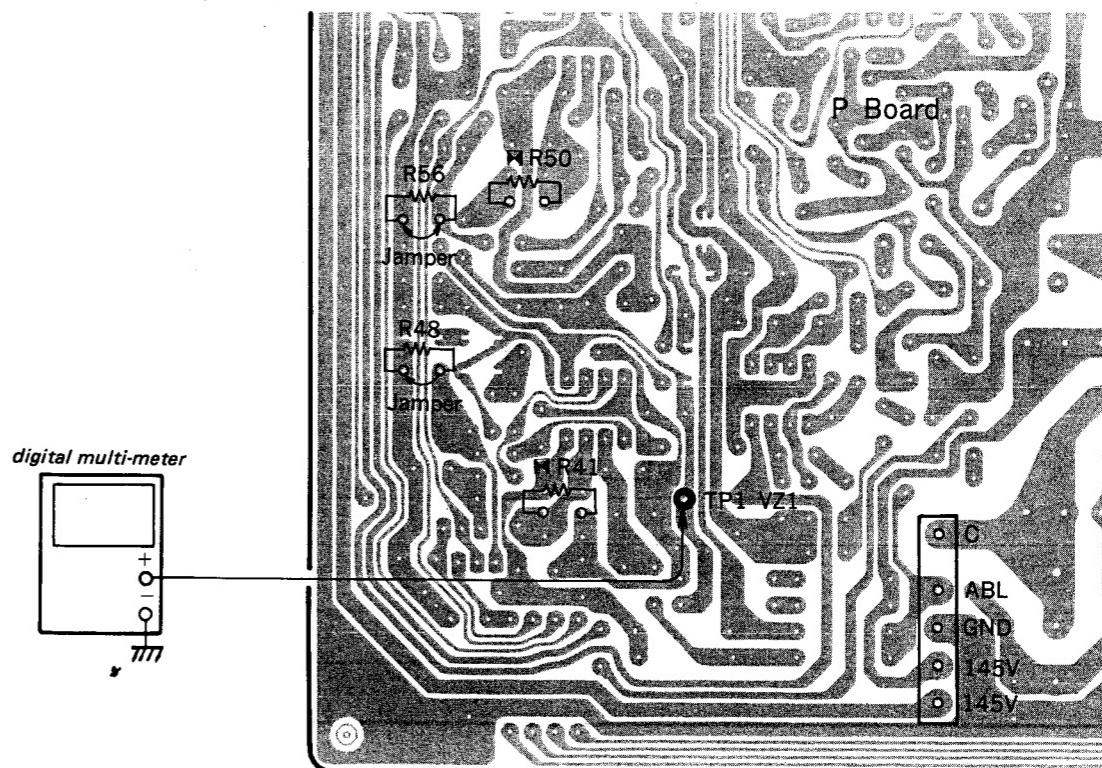
- IC4, IC5, D12, D13, R37, R38, R40, R41, R42, R43, R44, R45, R46, R65, R66 ..... P board
- 1. Receive all white signal.
- 2. CONTRAST control ..... center  
BRIGHTNESS control ..... center
- 3. Unplug the P-5 connector on the P board, and attach the jig to measure ABL current (1HV).
- 4. Connect the digital multimeter between TP1 on the P board and the ground, and confirm that the voltage is  $32.5 \pm 1.0 \text{ V}_{\text{dc}}$ .
- 5. Short-circuit R56 on the P board. (To stop the operation of current protector 2).
- 6. Receive the all black signal.
- 7. Set the CONTRAST and BRIGHTNESS controls to minimum. The value indicated on the DC current meter should be  $I_1$  at this time.
- 8. Receive the all white signal.

- 9. Set the CONTRAST and BRIGHTNESS controls to maximum, and raise the R, G, B contrast levels. Confirm that the value obtained by subtracting  $I_1$  from the current value becomes  $1.40 \pm 0.20 \text{ mA}$ , and that the current protector 1 circuit operates and the picture disappears.
- Note:** If, for the current value, the above-mentioned value is not obtained, raise the BKG levels.
- 10. If the specification is still not satisfied, change the value of R41.
- 11. Turn off the power supply of the unit, and return R56 and the P-5 connector to their original states. The R, G, B contrast levels will return to their initial states.
- Note:** When changing the contrasts and BKG data of R,G and B, do not save the changes.

1-627-362-12



1-627-362-13



**Confirmation of Current Protector Two Circuit Operation  R50**

When replacing the following parts (with  mark on the circuit diagram), be sure to confirm as follows.

- IC2, IC6, D14, D15, R23, R24, R49, R50, R51, R52, R53, R54, R55, R67, R68 .....P board
- 1. Receive picture of all white signal. (controller)
- 2. CONTRAST control .....center  
BRIGHTNESS control .....center
- 3. Unplug the P-5 connector on the P board, and install the parts to measure the ABL current (1HV).
- 4. Connect the digital multimeter between TP1 on the P board and the ground, and confirm that the voltage is 32.5Vdc.
- 5. Short R48 on the P board. (Stop the actuation of the current protector1).
- 6. Receive picture of all black signal.
- 7. Set the control of the CONTRAST and the BRIGHTNESS to the minimum, and set the designated of the direct currentmeter at this time as  $I_2$ .

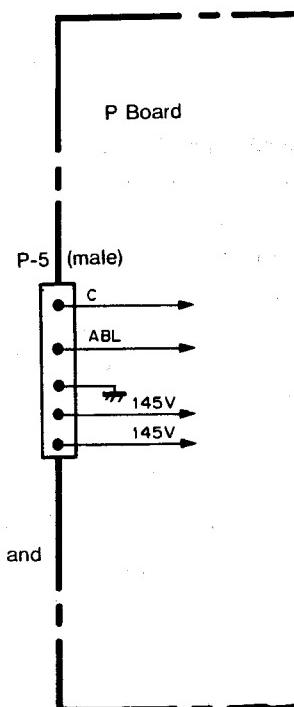
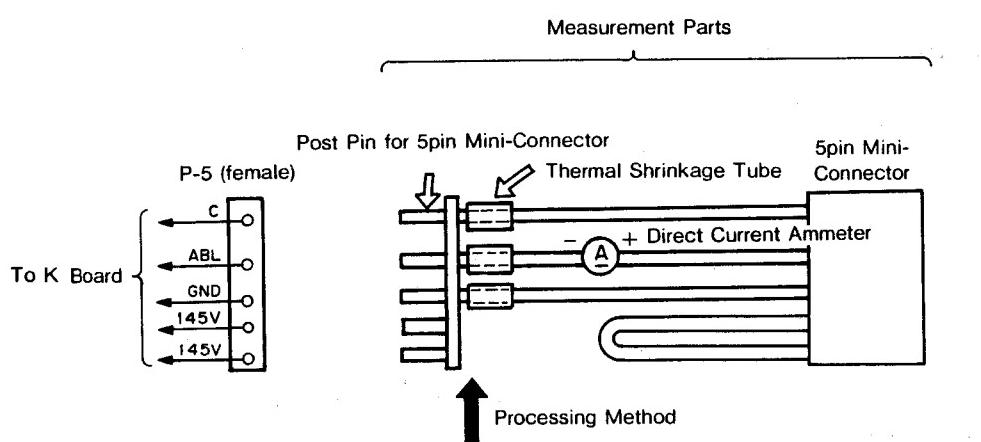
8. Receive picture of all white signal.
9. Set the control of the CONTRAST and the BRIGHTNESS to the maximum, and raise the contrast level of R, G, B by the commander, and confirm that the value which is subtracted  $I_2$  from this current value is  $1.40 \pm 0.20$ mA, and the circuit of the current protector 2 is actuated and the picture will be disappeared.

**Note :** If the current is not turned to above value, still raise the BKG level of R, G, B.

10. If the standard is not satisfied, select the resistance value of R50 to satisfy the standard.
11. Turn off the power of set, install the connector of P-5 and R48.

The contrast level of R, G, B and the BICG level of R, G, B is returned to the initial mode.

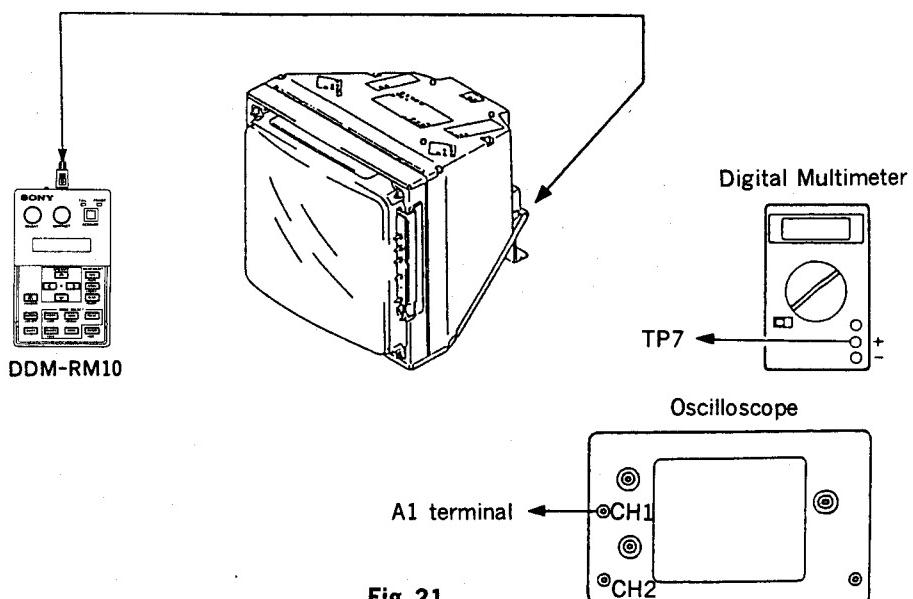
**Note :** When changing the contrast of R, G, B and the BKG data, be careful not to save (write into memory in the set).



#### 4-8. ELECTRICITY ADJUSTMENT

##### 4-8-1. A BOARD ADJUSTMENT

VGG and Cathode Bias Voltage Adjustment



##### VGG ADJUSTMENT

1. Select [VIDEO] in the adjustment mode.
2. Automatically, the picture will be an all white signal, so turn the screen to all black in the /INVERSE mode. (Invert the screen)
3. Connect the digital multimeter with TP7 on the A board.
4. Adjust to  $10.00 \pm 0.1\text{V}_{\text{DC}}$  with RV2.
5. Adjust the three A boards in the same way as 1 through 4.

##### CATHODE BIAS VOLTAGE ADJUSTMENT

1. Select [VIDEO] in the adjustment mode.
2. Automatically, the picture will be an all white signal, so turn the screen to all black in the /Inverse mode. (Invert the picture)
3. Connect the oscilloscope probe with the A1 terminal (junction of the ABboard) on the AA board.
4. Adjust to  $65.0 \pm 0.5\text{V}_{\text{DC}}$  with RV1.

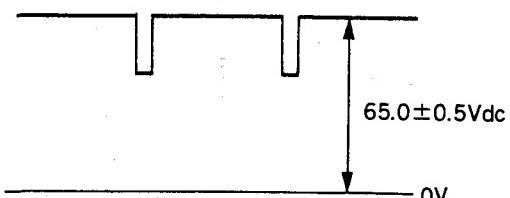


Fig. 22

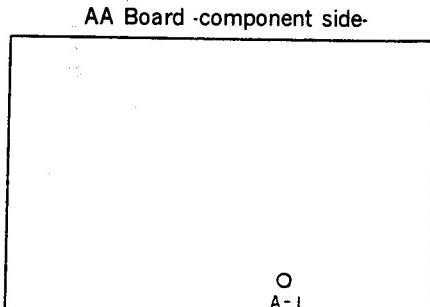
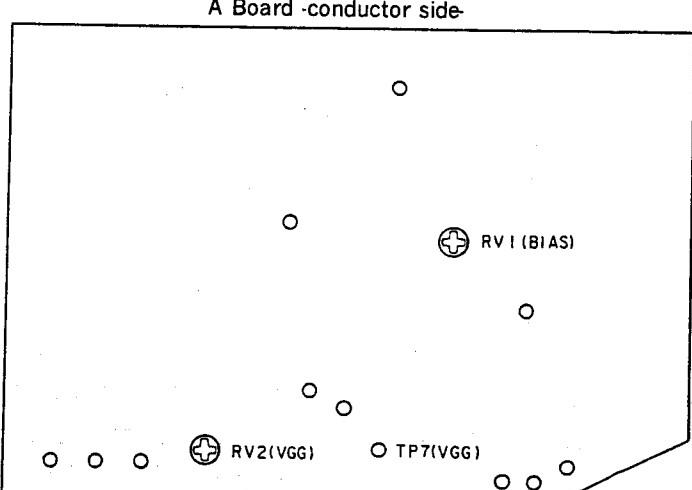
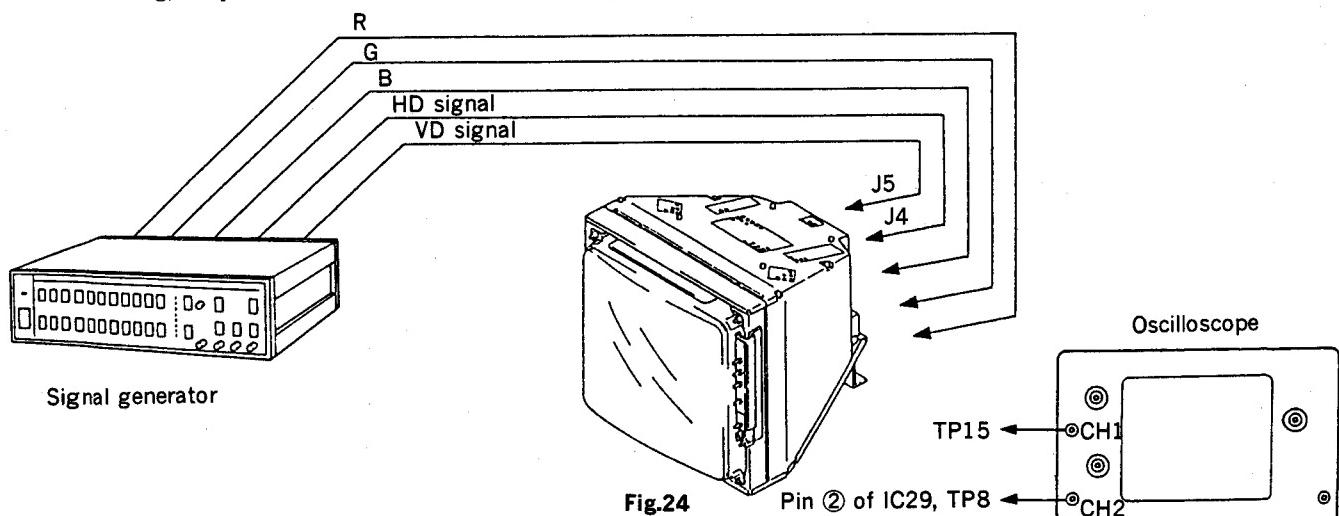


Fig. 23

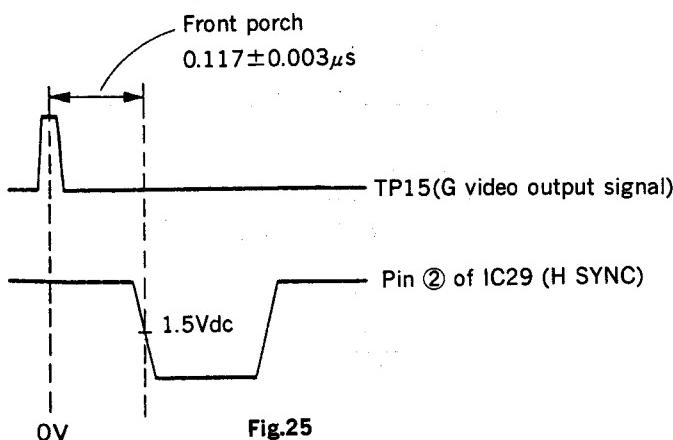
#### 4-8-2. B BOARD ADJUSTMENT

H.SYNC Timing, Output Level and H.BLK Width Adjustments



#### H.SYNC TIMING ADJUSTMENT

1. Input HD and VD signals to J4 and J5 from the external signal generator.
- Note :** TP1(HD) should be  $126.84 \pm 0.02$  kHz at TTL level.  
TP2(VD) should be  $60.00 \pm 0.01$  Hz at TTL level.
2. Set SW1 to TEST or HATCH on the B board.
3. Connect the oscilloscope probe to TP15 (video output signal) and to pin ② (H.SYNC) of IC29.
4. Adjust RV2 (H.SYNC TIMING) so that the front porch is  $0.117 \pm 0.003 \mu s$  as shown in the figure below.



#### H.BLK WIDTH ADJUSTMENT

1. Set SW1 to TEST or HATCH.
2. Connect the oscilloscope probe to TP8(G1G) and TP15 (video output signal).
3. Adjust RV1 (H.BLK WIDTH) so that the timing is  $0.12 \mu s \pm 0.02 \mu s$  as shown in the figure below.

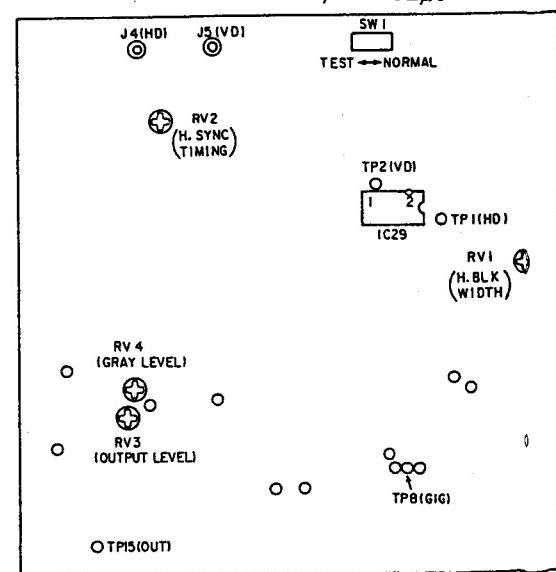
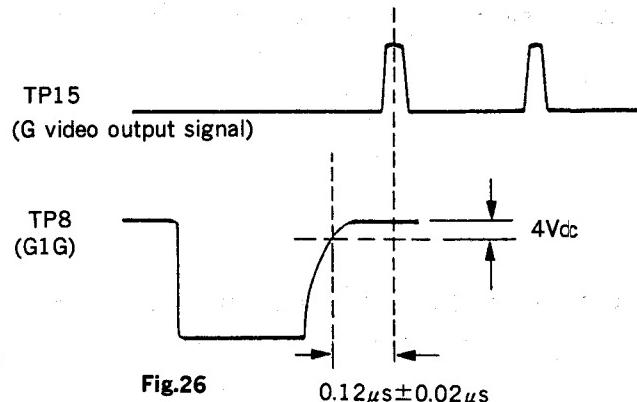


Fig.27

#### OUTPUT LEVEL ADJUSTMENT

1. Set SW1 to NORMAL on the B board.
2. Select All White by the [SG SEL] key.
3. Connect the oscilloscope probe to TP15 (video output signal).
4. Adjust RV3 until TP15 indicates  $1.07 \pm 0.03$  Vp-p.
5. Select GRAY by the [SG SEL] key.
6. Adjust RV4 until TP15 indicates  $0.214 \pm 0.006$  Vp-p.

#### 4-8-3. E BOARD ADJUSTMENT(1)

H.CENT and H.SIZE Operation Check and Offset Adjustment

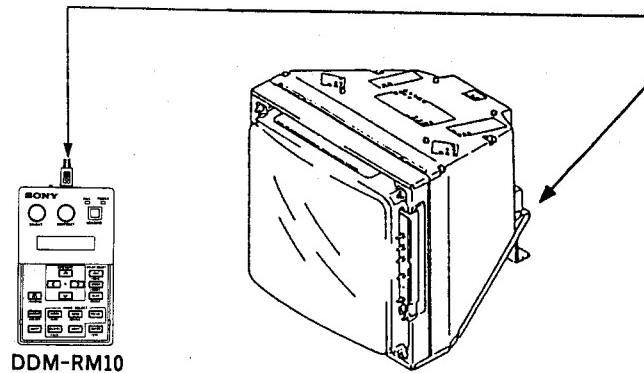


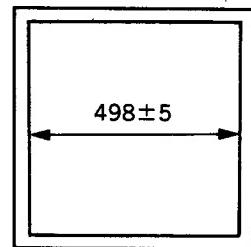
Fig. 28

#### H.CENT OPERATION CHECK AND OFFSET ADJUSTMENT

1. Select CENT of GEOM in the adjustment mode.
2. Confirm that the picture is shifted right and left when changing the data of H.CENT. ( $\ll$ ,  $\gg$ )
3. Change the data of H.CENT and adjust to H: 80. ( $\ll$ ,  $\gg$ )
4. Adjust the picture to center with RV2.

#### H.SIZE OPERATION CHECK AND OFFSET ADJUSTMENT

1. Select SIZE of GEOM in the adjustment mode.
2. Confirm that the size of the picture is changed when changing the data of H.SIZE ( $\ll$ ,  $\gg$ )
3. Change the data of H.SIZE and adjust to H: 80. ( $\ll$ ,  $\gg$ )
4. Adjust the size of the picture to  $498\pm 5$ mm with RV1.



E Board -component side-

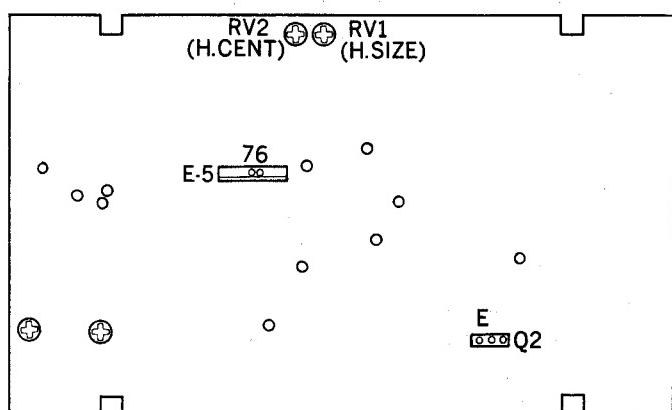


Fig. 29

#### 4-8-4. E BOARD ADJUSTMENT(2)

H.FREQ and V.HOLD Adjustments

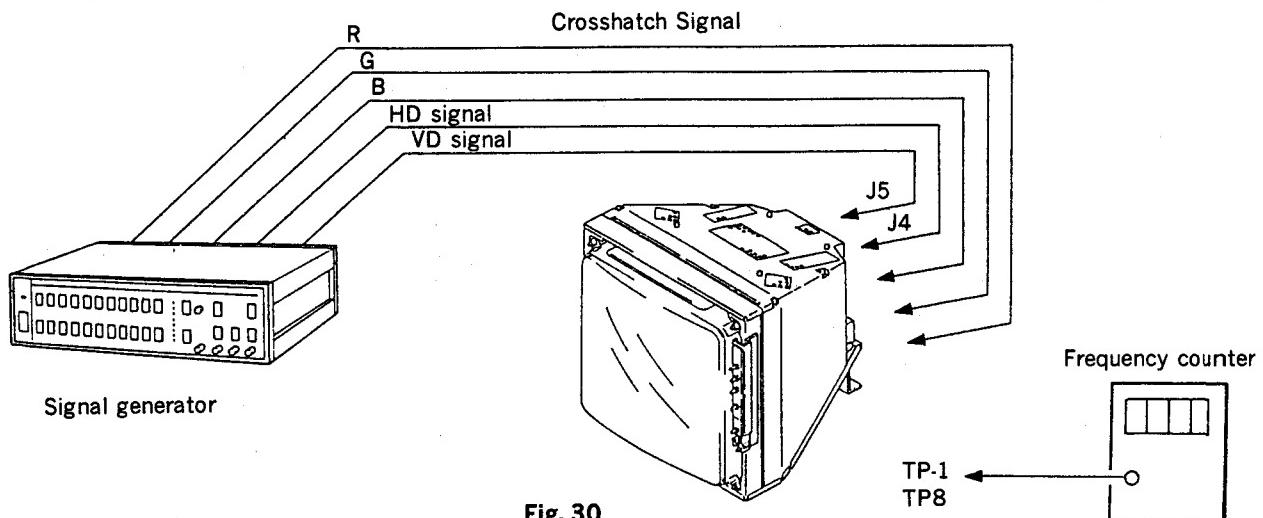
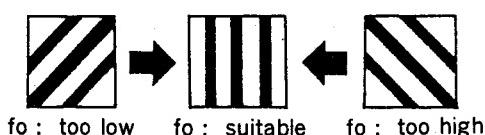


Fig. 30

#### H. FREQ ADJUSTMENT

1. Select the EX mode by the [SG SEL] key.
2. Input the crosshatch signal from the external signal generator.
3. In order to get into a free run condition, connect a  $47\mu\text{F}/25\text{V}$  capacitor between TP9 and the ground.
4. Turn RV3 clockwise or counterclockwise, and confirm that the horizontal sync on the screen is locked.



5. After adjustment, remove the capacitor and confirm that the horizontal sync is locked.

**Note :** In case an external signal generator is not available, connect a frequency counter to TP1, connect a capacitor between TP9 and the ground, adjust RV3 so that the frequency counter reading becomes  $f_H = 126.84\text{KHz} \pm 600\text{Hz}$ .

#### V.HOLD ADJUSTMENT

1. Select the EX mode by the [SG SEL] key.
2. Input the crosshatch signal from the external signal generator.
3. Connect the frequency counter to TP8.
4. In order to get into the free run condition, connect a  $47\mu\text{F}/25\text{V}$  capacitor between TP10 and the ground.
5. Adjust the frequency counter to  $f_H = 55.0 \pm 1.0\text{Hz}$  with RV4.
6. After the adjustment, remove the capacitor and confirm that the vertical sync is locked.

E Board -component side-

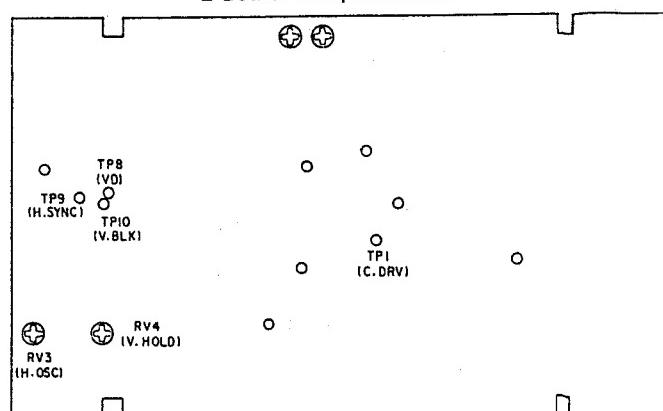
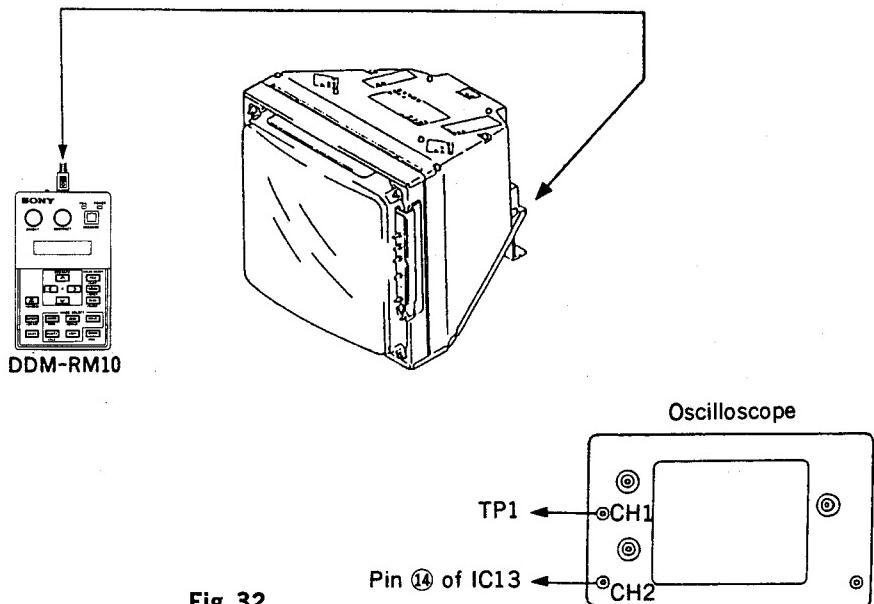


Fig. 31

#### **4-8-5. M1 BOARD ADJUSTMENT**

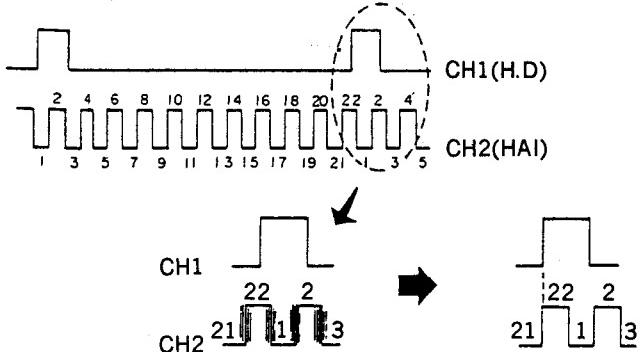
## Address Counter Adjustment



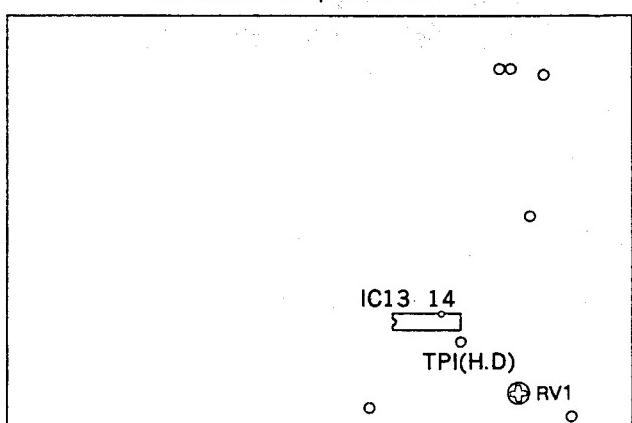
**Fig. 32**

## **ADDRESS COUNTER ADJUSTMENT**

1. Select **VIDEO** mode.
  2. Automatically, the picture will be an all white signal.
  3. Connect CH1 of the oscilloscope to TP1(HD). Connect CH2 of the oscilloscope to pin ⑭ of IC13. To achieve a jitter-free condition, adjust RV2 as shown in the figure below.



**Fig. 33**

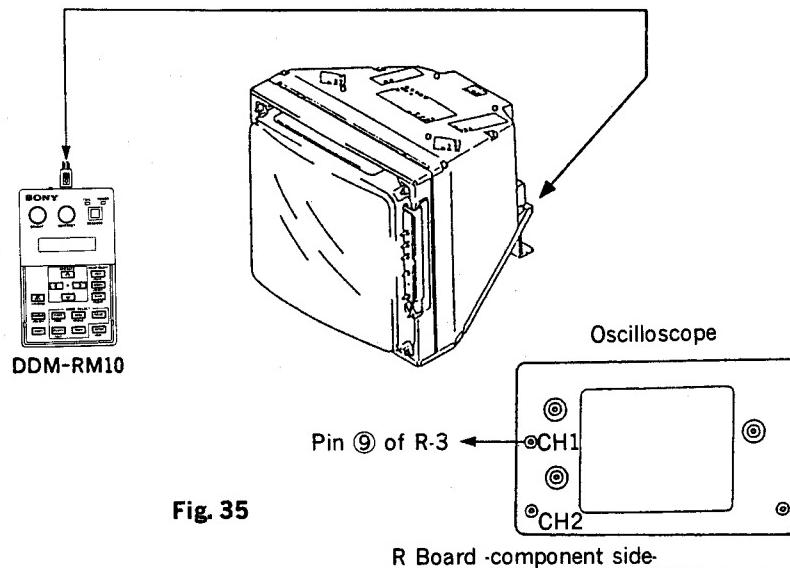


**Fig. 34**

4. Confirm that the CH2 waveform consists of 22 pulses.

#### 4-8-6. R BOARD ADJUSTMENT

DF-Y Operation Check and Offset Adjustment



#### DF-Y OPERATION CHECK AND OFFSET ADJUSTMENT

1. Select COAR2 mode of FOCUS key.
2. Automatically, the picture will become cross hatch 2. Next, turn on the cursor display and verify that it is at the center of the screen.
3. Press the OPERATE key ( $\nabla$ ,  $\Delta$ ) and set the data of DYNAMIC FOCUS to 80.
4. Turn RV1 clockwise or counterclockwise, and confirm that the focus in the picture is changed.
5. Adjust the center of the picture to be just focused with RV1.

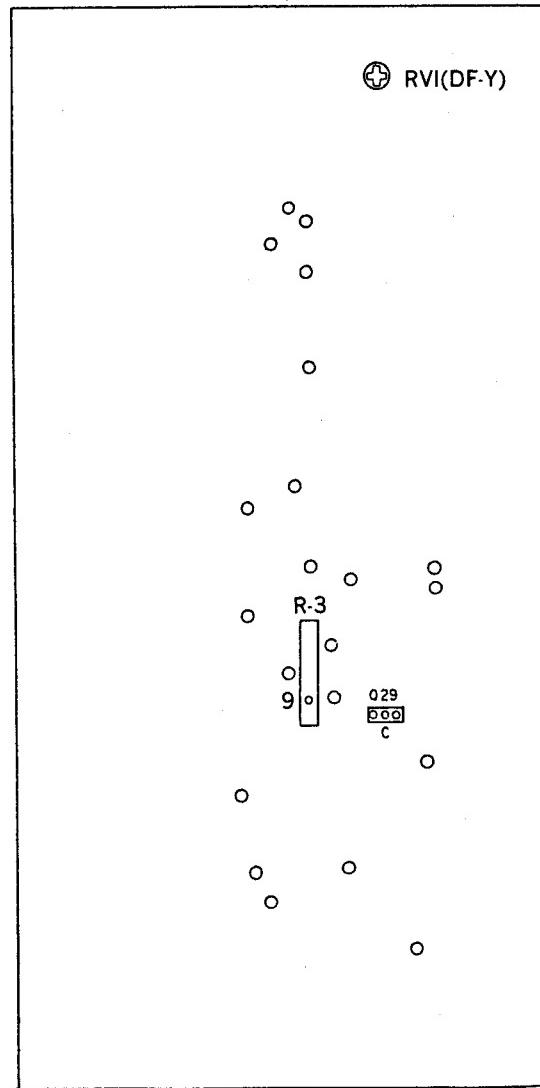
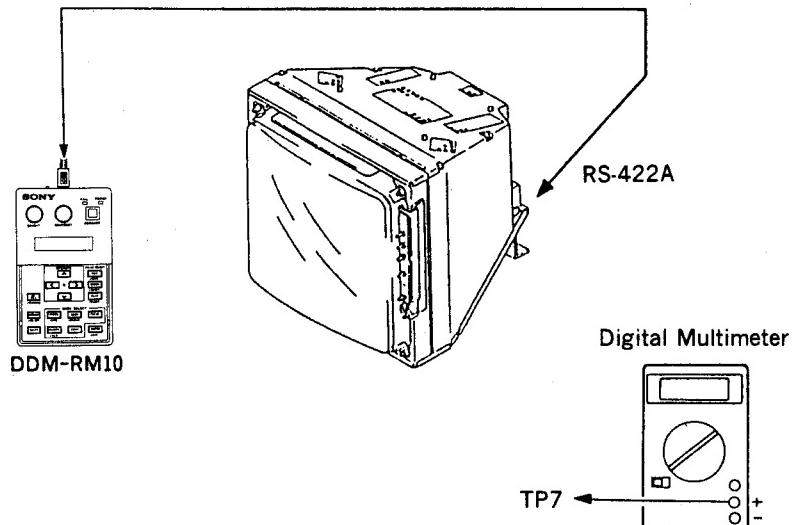


Fig. 36

#### 4-8-7. S BOARD ADJUSTMENT

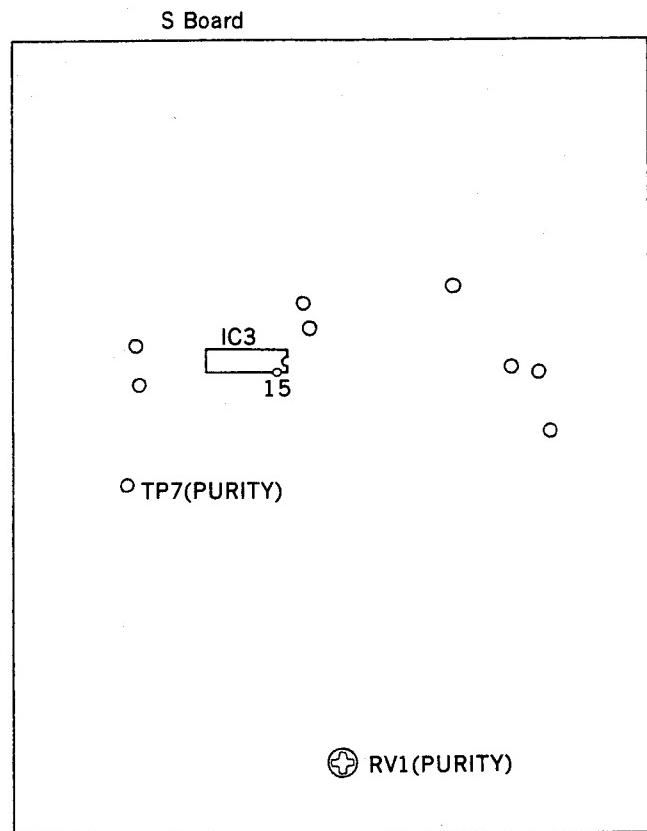
Purity Operation Check and Offset Adjustment



**Fig. 37**

#### PURITY OPERATION CHECK AND OFFSET ADJUSTMENT

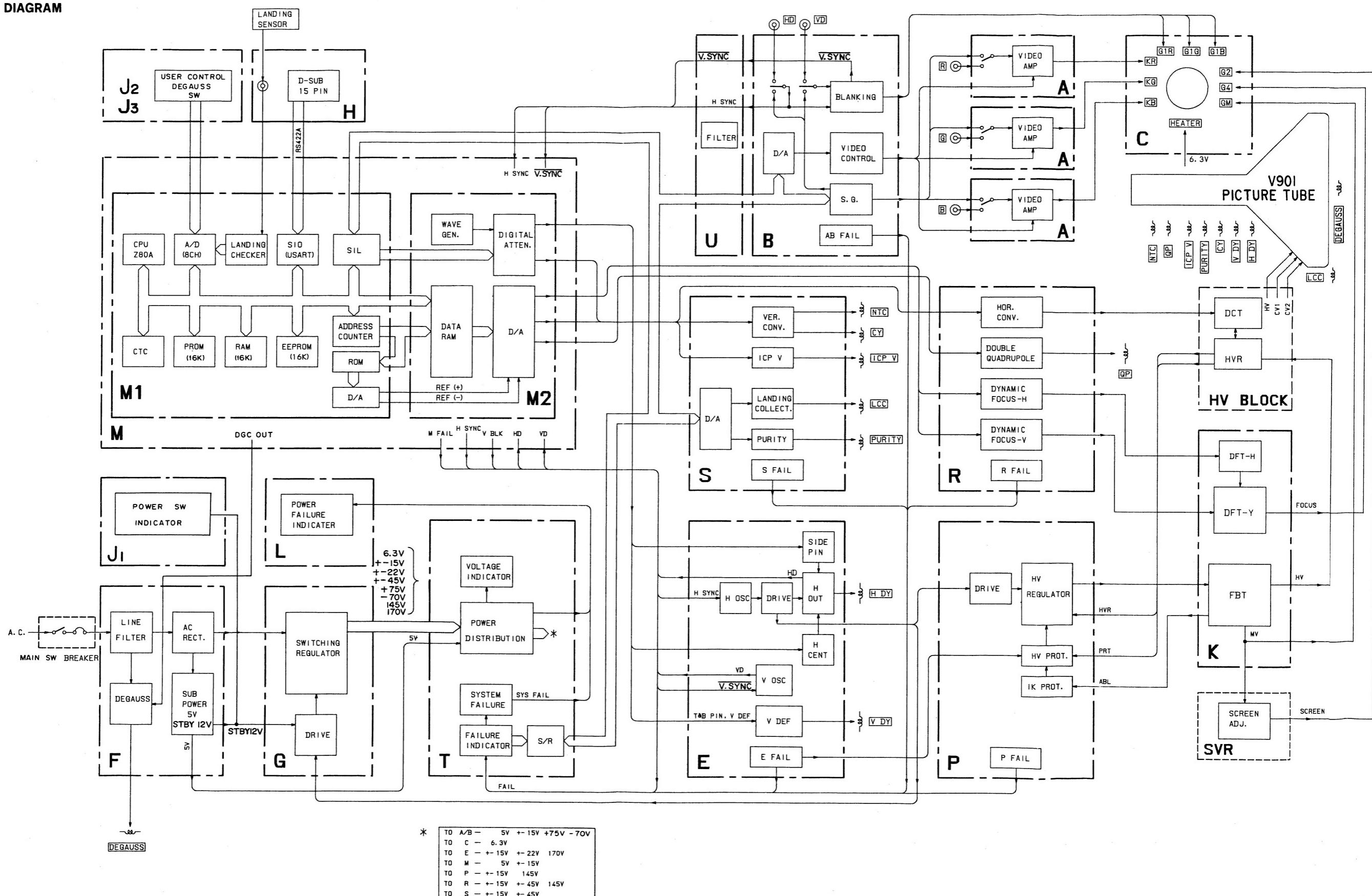
1. Select the PURITY mode.
2. Connect the digital multimeter to TP7.
3. Confirm that TP7 voltage varies from  $-5V_{DC}$  to  $+5V_{DC}$  when PURITY data is varied from “00” to “FF” ( $\llcorner$ ,  $\lrcorner$ ).
4. Connect the digital multimeter to pin ⑯ of IC3 and set the voltage to  $2.5V_{DC}$  by varying PURITY data. ( $\llcorner$ ,  $\lrcorner$ ).
5. Connect the digital multimeter to TP7 and adjust RV1 (PURITY) to  $0V_{DC}$ .

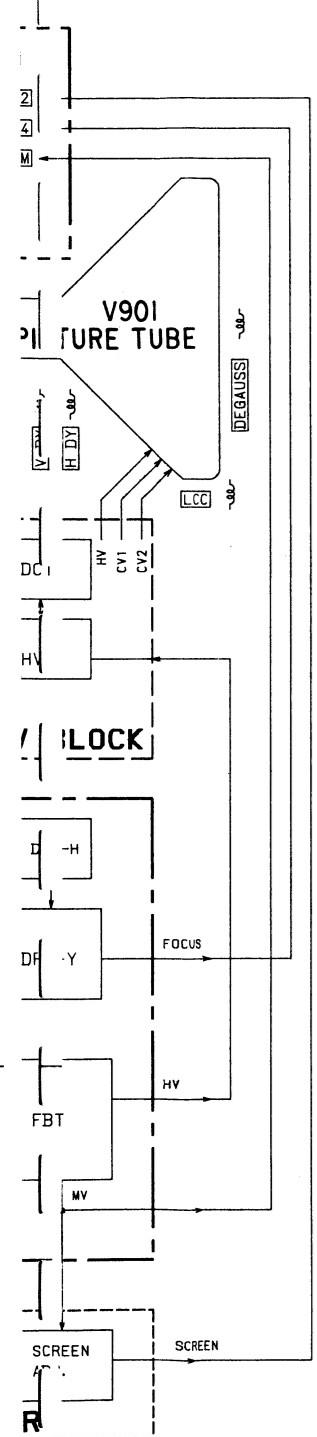


**Fig. 38**

**SECTION 5  
DIAGRAMS**

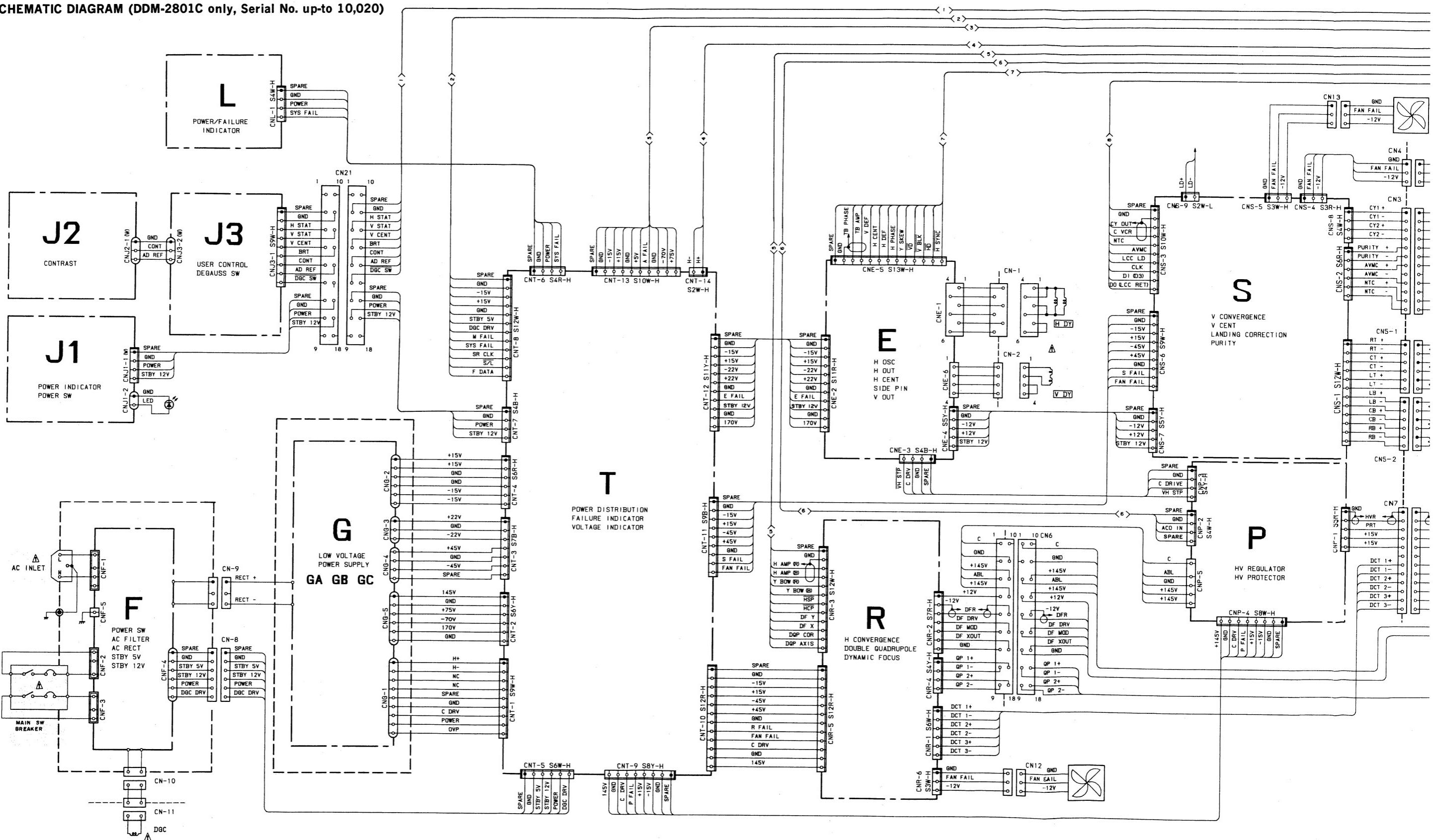
**5-1. BLOCK DIAGRAM**

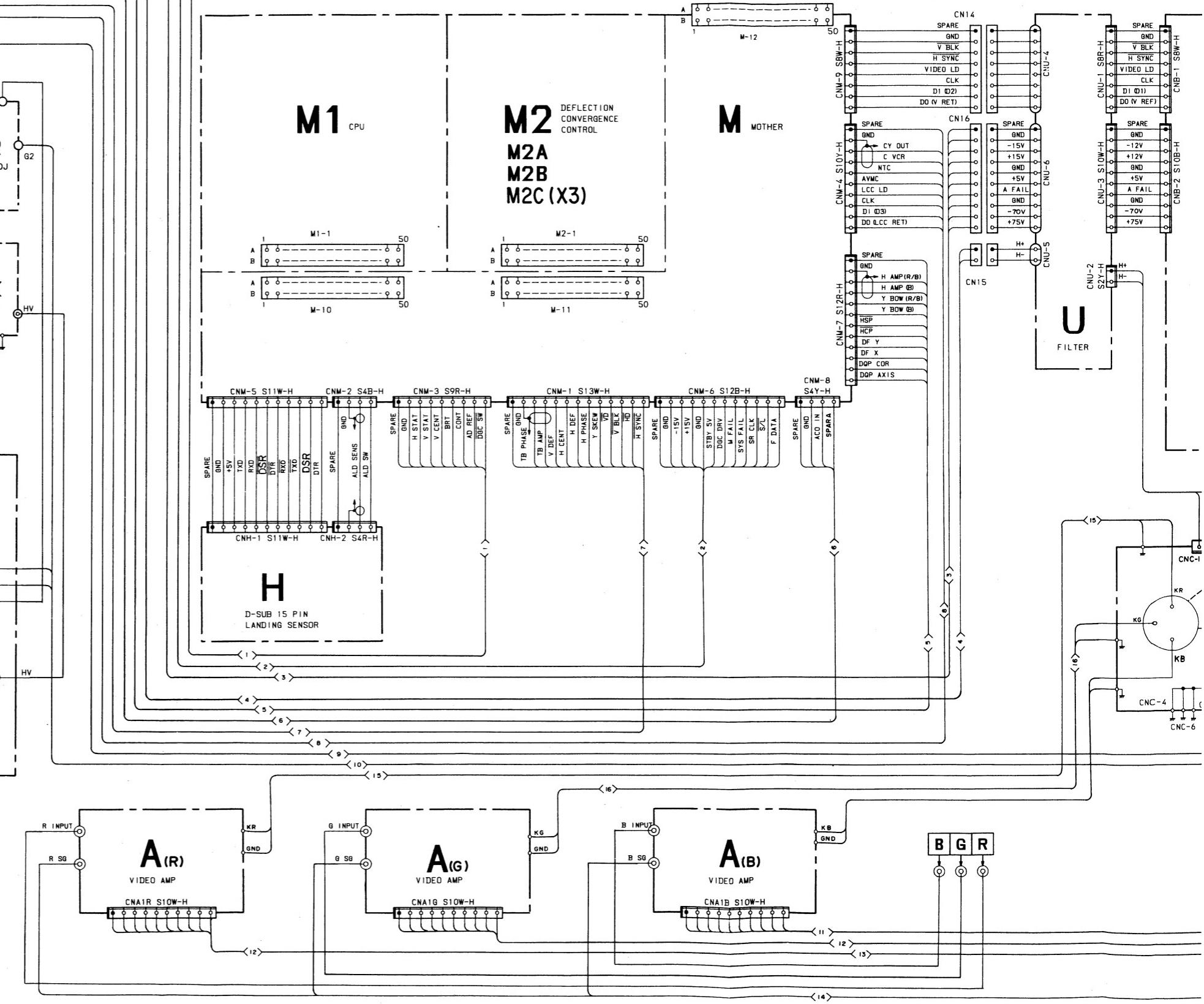
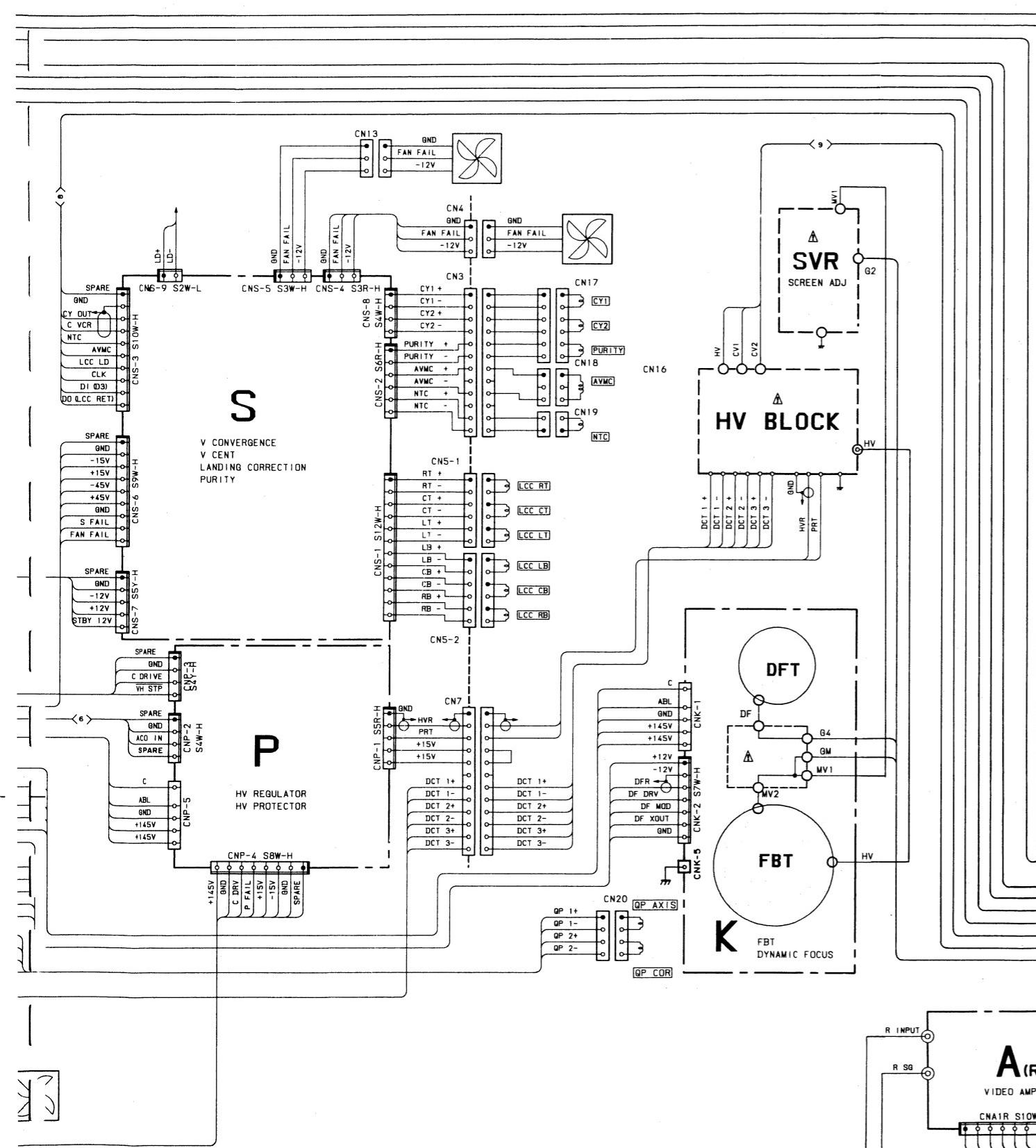


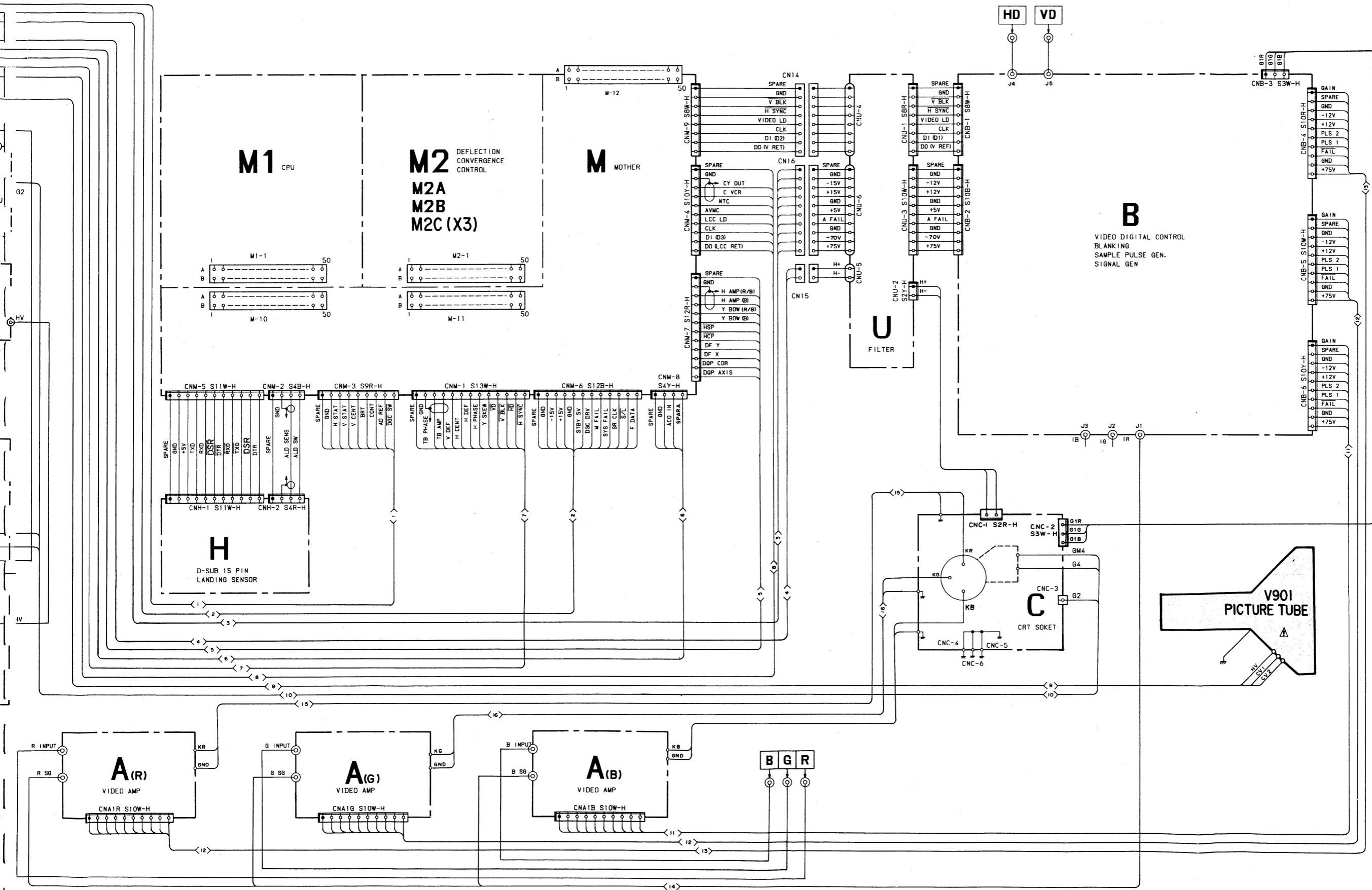




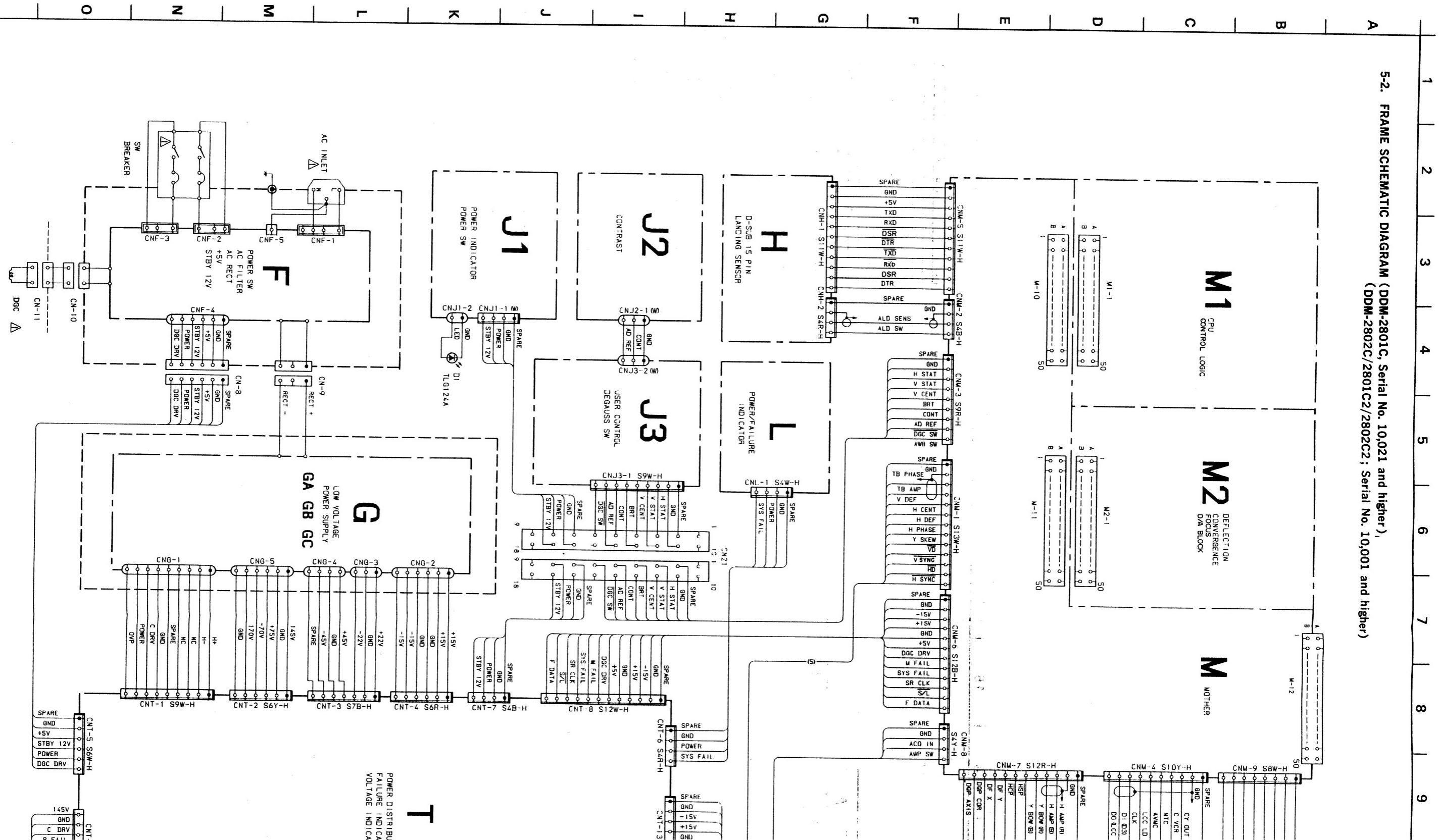
5-2. FRAME SCHEMATIC DIAGRAM (DDM-2801C only, Serial No. up-to 10,020)

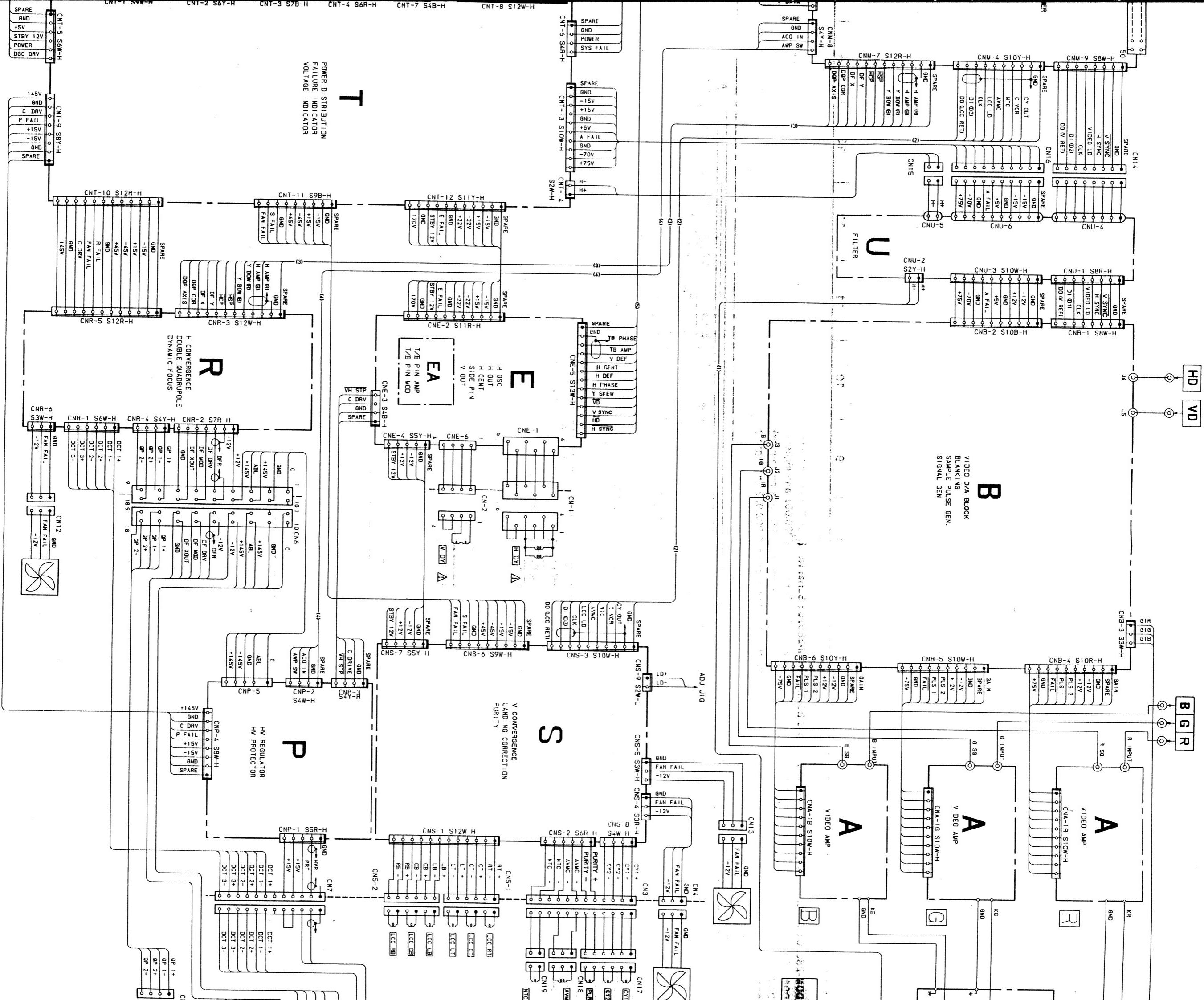


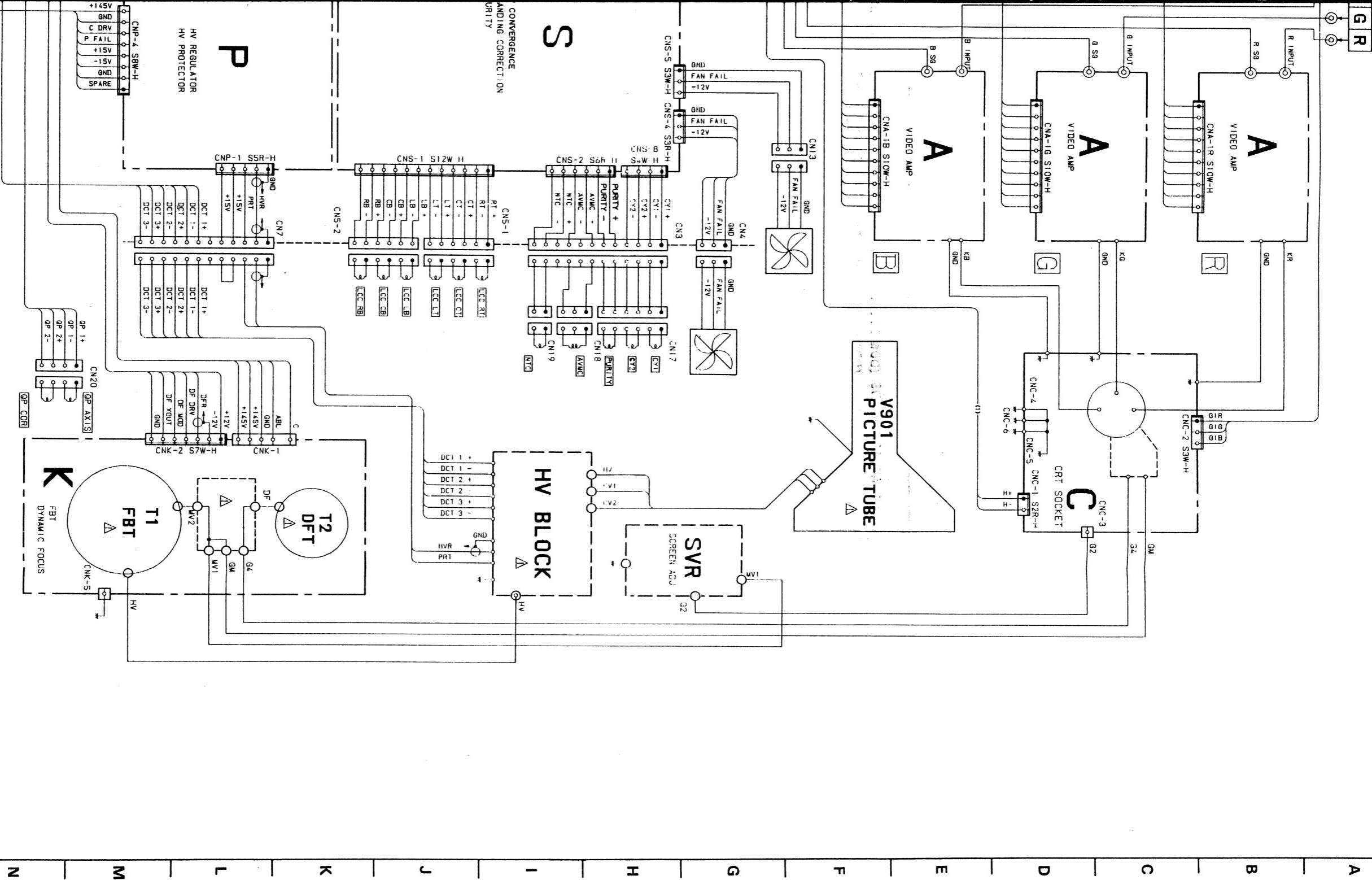




5-2. FRAME SCHEMATIC DIAGRAM (DDM-2801C, Serial No. 10,021 and higher),  
(DDM-2802C/2801C2/2802C2; Serial No. 10,001 and higher)







Note:

**Note:** The components identified by shading and mark ▲ are critical for safety. Replace only with part number specified.

par une marque ▲ sont d'une importance critique pour la sécurité. Ne les remplacer que par des pièces de numéro spécifié.

### 5-3. PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM

Note:

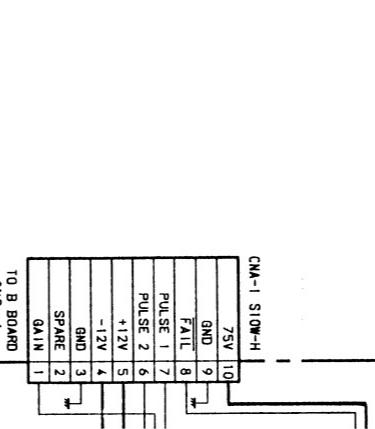
Note: The components identified by shading and mark  $\triangle$  are critical for safety. Replace only with part number specified.

1

2

3

- A, AA, AB BOARDS (DDM-2801C; DDM-2802C; DDM-2801C2; DDM-2802C2)



#### Reference information

RESISTOR	: RN	METAL FILM
	: RC	SOLID
	: FPRD	NONFLAMMABLE CARBON
	: RS	FUSE
	: RB	NONFLAMMABLE METAL OXIDE
	: RW	NONFLAMMABLE CEMENT
	: *	ADJUSTMENT RESISTOR
CAPACITOR	: LF-BL	NONFLAMMABLE WIREWOUND
	: TA	MICRO INDUCTOR
	: PS	NONFLAMMABLE TANTALUM
	: PP	SYTROL
	: PT	POLYPROPYLENE
	: MPS	MYLAR
	: MPP	METALIZED POLYESTER
	: ALB	METALIZED POLYPROPYLENE
	: ALT	BIPOLAR
	: ALR	HIGH TEMPERATURE
		HIGH RIPPLE

- All capacitors are in  $\mu\text{F}$  unless otherwise noted. p :  $\mu\text{F}$  50WV or less are not indicated except for electrolytic and tantalum.
- All resistors are in ohms.
- Indication of resistance, which does not have one for rating electrical power is as follows.
- Pitch: 5mm
- Rating electrical power: 1/4W
- Chip resistor are 1/10W unless otherwise noted.
- : nonflammable resistor.
- : fusible resistor.
- : internal component.
- : panel designation or adjustment for repair.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- The components identified by  $\blacksquare$  in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

When replacing components identified by  $\blacksquare$  mark the necessary adjustments indicated. If results do not meet the specified value, change the component identified by  $\blacksquare$  and repeat the adjustment until the specified value is achieved. (Refer to R312, R313, R30, R31, R25, R26, R27, R59, R60, R61, R41, R50 adjustment on page 88-93).

When replacing the part in below table, be sure to perform the related adjustment.

- Voltages are a reference value as against the ground potential when "Cross hatch 1" of the internal signal selection mode is selected.
- Readings are taken with a 10M $\Omega$  digital multimeter.
- Voltages are dc with respect to ground unless otherwise noted.
- Voltage variations may be noted due to normal production tolerances.
- All voltages are in V.
- \* : Can not be measured.
- Circled numbers are waveform references.
- : B + bus.
- : B - bus.

Part replaced ()	Adjustment ()
R24, R25	+ B MAX
IC101	GA board
R306, R312, R313, IC301	GC board
D101, Q101, R115, R116	GA board
IC203, IC204, R213, R214, R215, R216	GB board
IC303, R309	GC board
R30, R31	G board
IC2, IC3, R11, R23, R24, R25, R26, R27	HV REG
R21, R28, R29, R31, R34	HV HOLD DOWN
HV BLOCK	P board
IC4, IC5, D12, D13, R37, R38, R40, R41, R42, R43, R44, R45, R46, R47, R48, R59, R60, R61, R62, R63, R64, R65, R66	CURRENT PROTECTOR 1
IC2, IC5, D14, D15, R23, R24, R49, R50, R51, R52, R53, R54, R55, R56, R57, R58, R59, R60, R61, R62, R63, R64, R65, R66	CURRENT PROTECTOR 2
IC2, IC5, D14, D15, R23, R24, R49, R50, R51, R52, R53, R54, R55, R56, R57, R58, R59, R60, R61, R62, R63, R64, R65, R66	P board

2

3

4

5

6

7

8

9

10

11

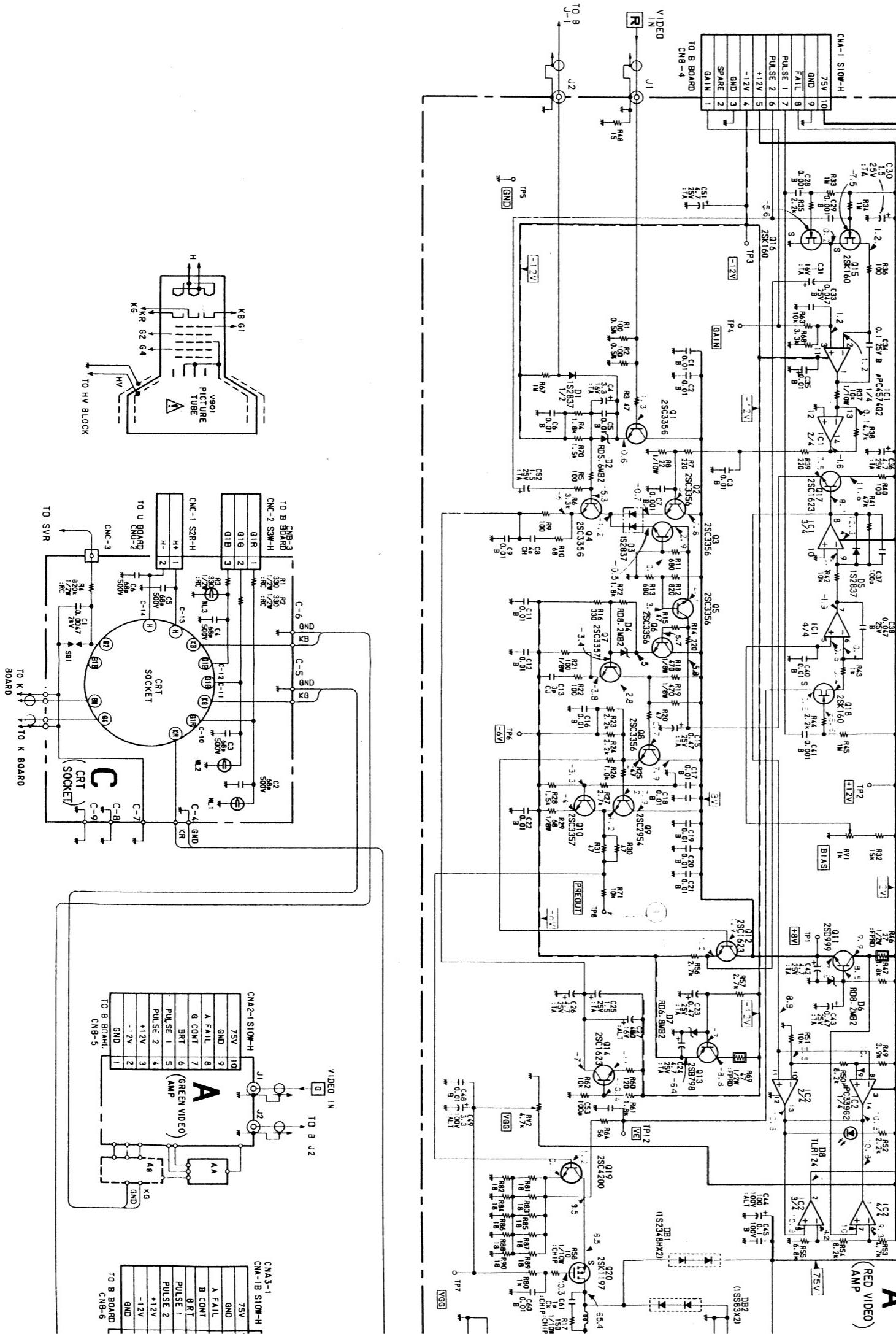
12

13

1

**B BOARDS**  
**(DDM-2801C; Serial No. 2,000,014 and higher)**  
**(DDM-2802C; Serial No. 2,000,001 and higher)**  
**(DDM-2801C2; Serial No. 2,000,004 and higher)**  
**(DDM-2802C2; Serial No. 2,000,002 and higher)**

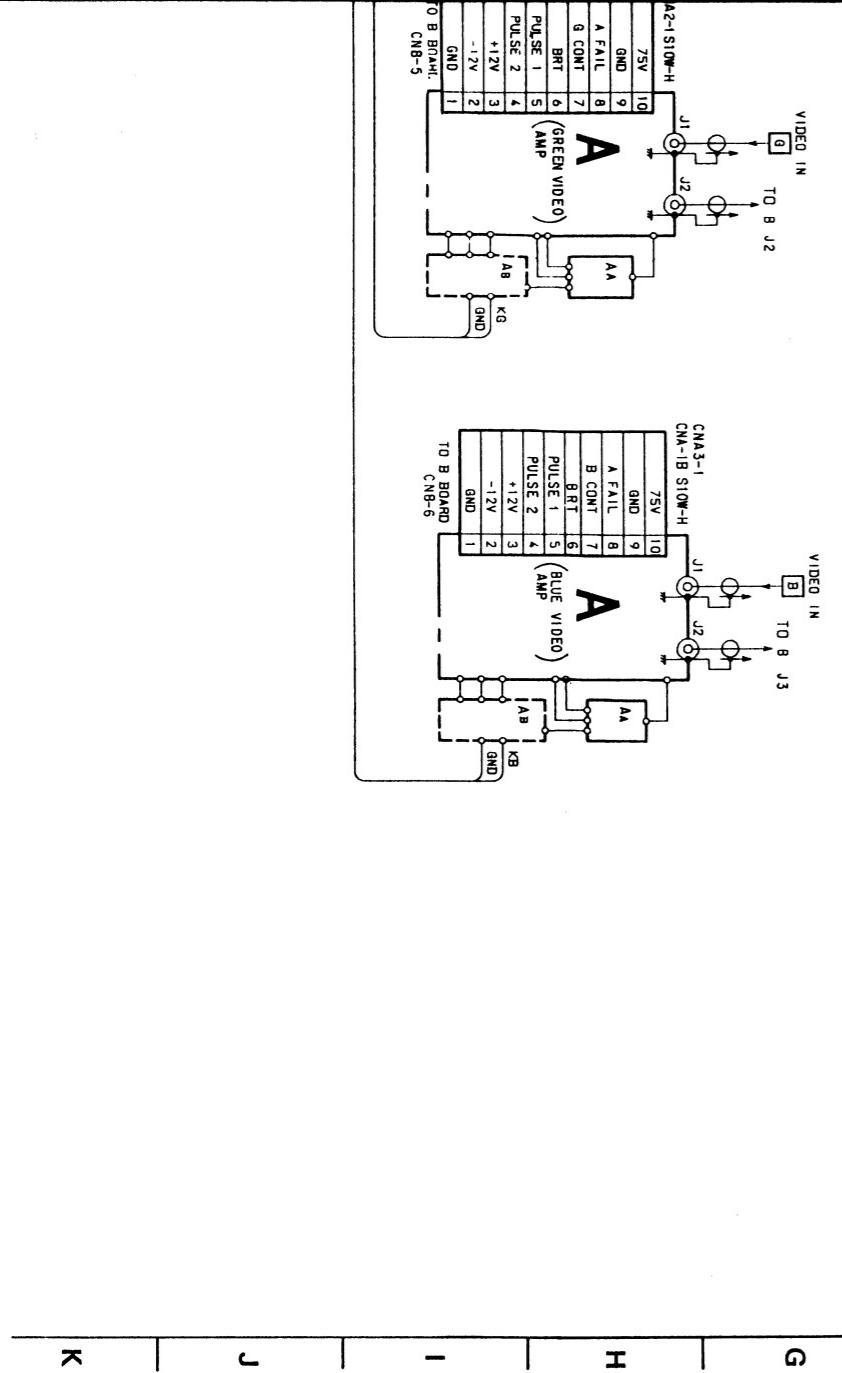
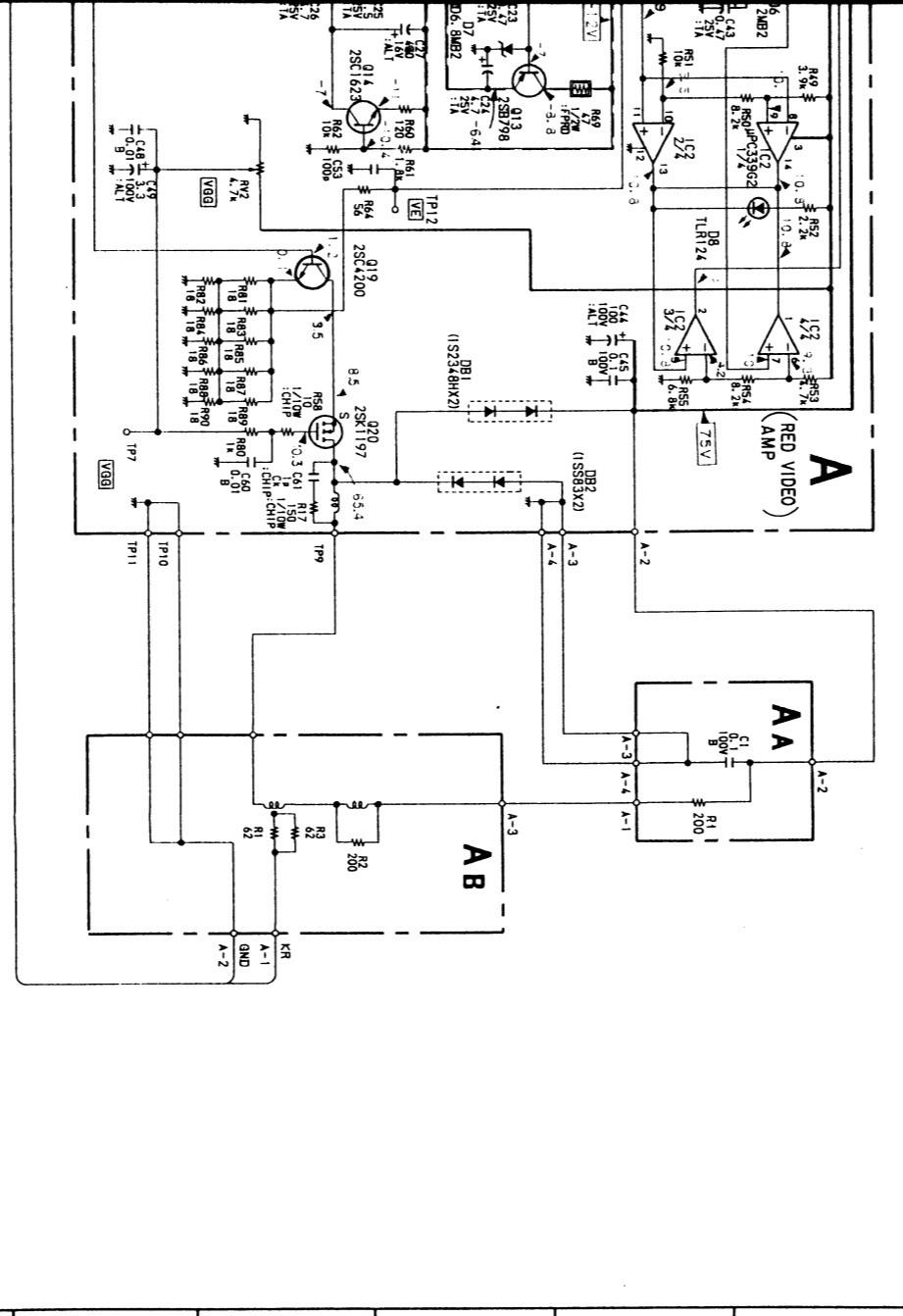
**• C BOARD (DDM-2801C; Serial No. 2,000,019 and higher)**  
**(DDM-2802C; Serial No. 2,000,001 and higher)**  
**(DDM-2801C2; Serial No. 2,000,004 and higher)**  
**(DDM-2802C2; Serial No. 2,000,002 and higher)**



1 12 13 14 15 16 17 18

**-A Board-**

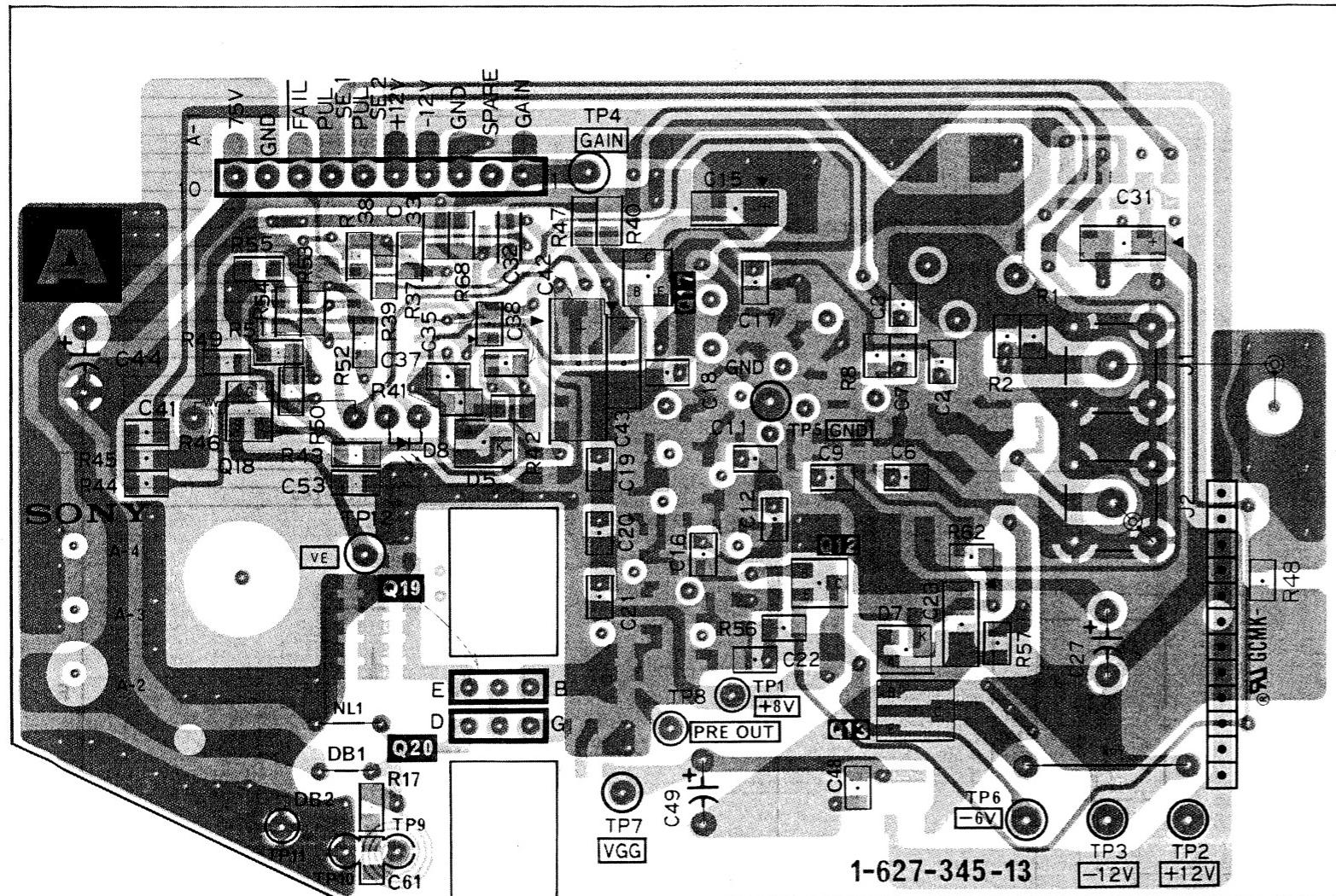
1	SAMPLE HOLD
2	FAIL DET
3	INPUT BUFF
4	GAIN CONT 1
5	GAIN CONT 2
6	V-I CONV
7	BUFF 1
8	BUFF 2
9	AMP
10	BUFF 3
11	PRE DRIVE
12	+8V REG
13	BUFF 4
14	-6V REG
15	CURRENT SOURCE 1
16	GATE 1
17	GATE 2
18	BUFF 5
19	GATE 3
20	DRIVE
21	FINAL
22	CURRENT SOURCE 2
23	GATE 4
24	VOLTAGE SHIFT 1
25	ISOLATION
26	VOLTAGE SHIFT 2
27	CLAMP
28	+8V REG
29	-6V REG
30	FAIL IND



**A**

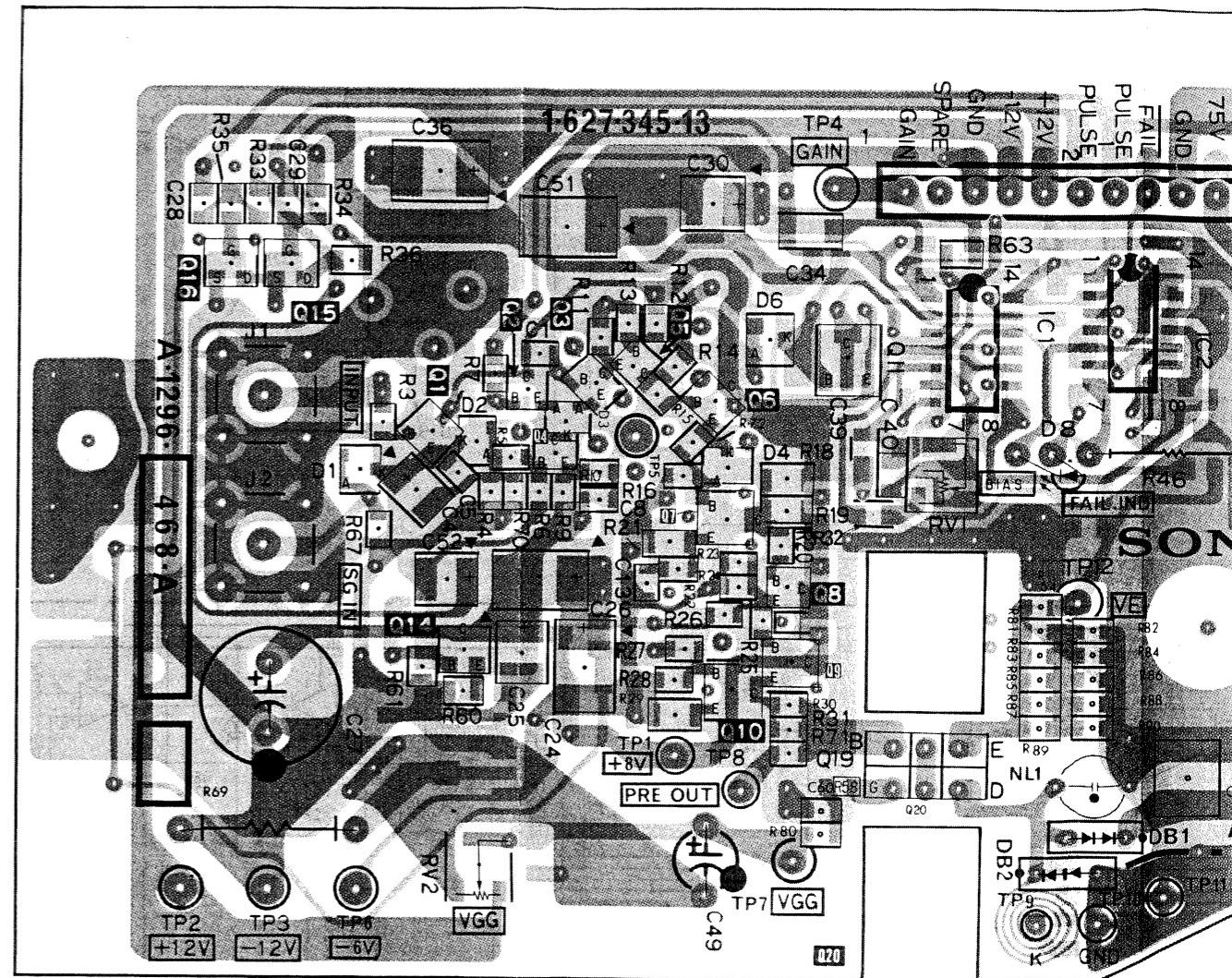
(VIDEO AMP)

—A BOARD— —Component side— (DDM-2801C; Serial No. 2,000,014 and higher)  
(DDM-2802C; Serial No. 2,000,001 and higher)  
(DDM-2801C2; Serial No. 2,000,004 and higher)  
(DDM-2802C2; Serial No. 2,000,002 and higher)



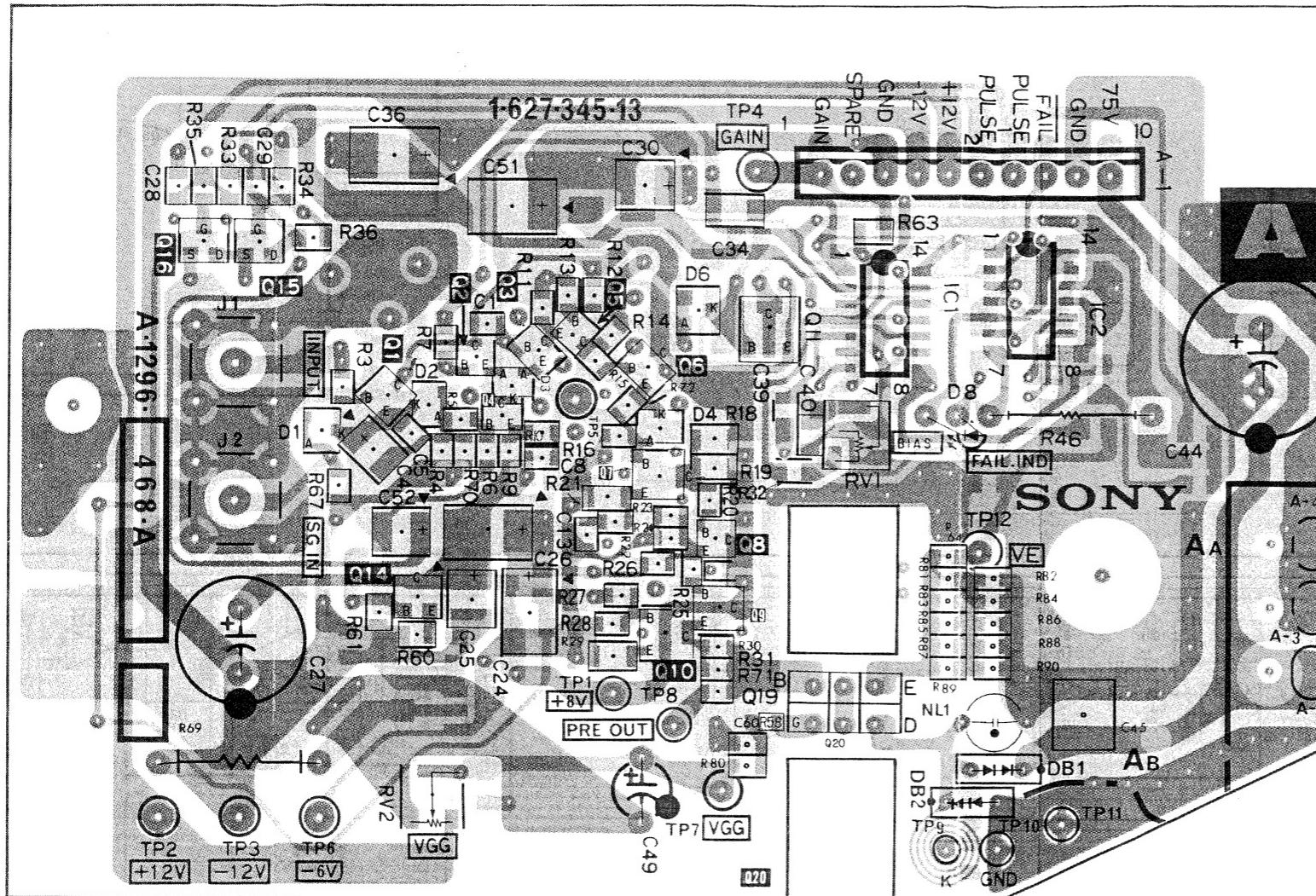
• : Pattern from the side which enables seeing  
• : Pattern of the rear side.

—A BOARD— —Conductor side— (DDM-2801C; Serial No. 2,000,014 and higher)  
(DDM-2802C; Serial No. 2,000,001 and higher)  
(DDM-2801C2; Serial No. 2,000,004 and higher)  
(DDM-2802C2; Serial No. 2,000,002 and higher)



• : Pattern from the side which enables seeing  
• : Pattern of the rear side.

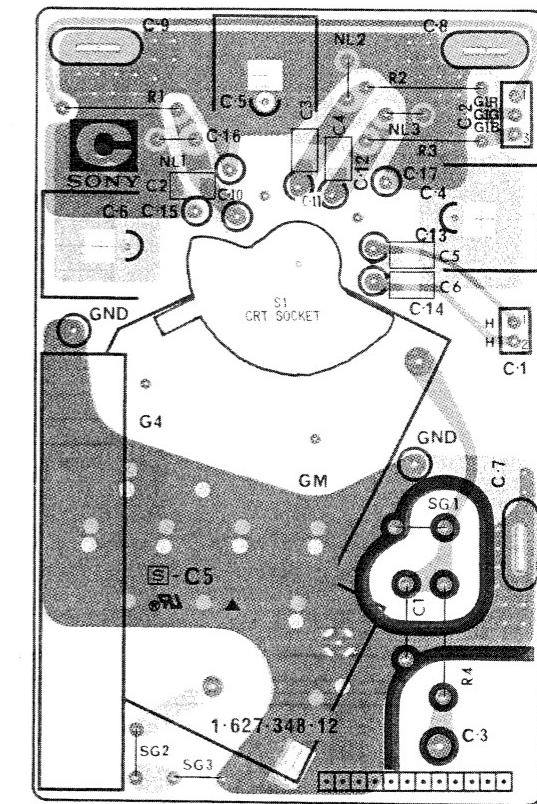
**—A BOARD—** —Conductor side— (DDM-2801C; Serial No. 2,000,014 and higher)  
(DDM-2802C; Serial No. 2,000,001 and higher)  
(DDM-2801C2; Serial No. 2,000,004 and higher)  
(DDM-2802C2; Serial No. 2,000,002 and higher)



- : Pattern from the side which enables seeing
- : Pattern of the rear side

- : Pattern from the side w
- : Pattern of the rear side

**—C BOARD—** (DDM-2801C; Serial No. 2,000,019 and higher)  
(DDM-2802C; Serial No. 2,000,001 and higher)  
(DDM-2801C2; Serial No. 2,000,004 and higher)  
(DDM-2802C2; Serial No. 2,000,002 and higher)



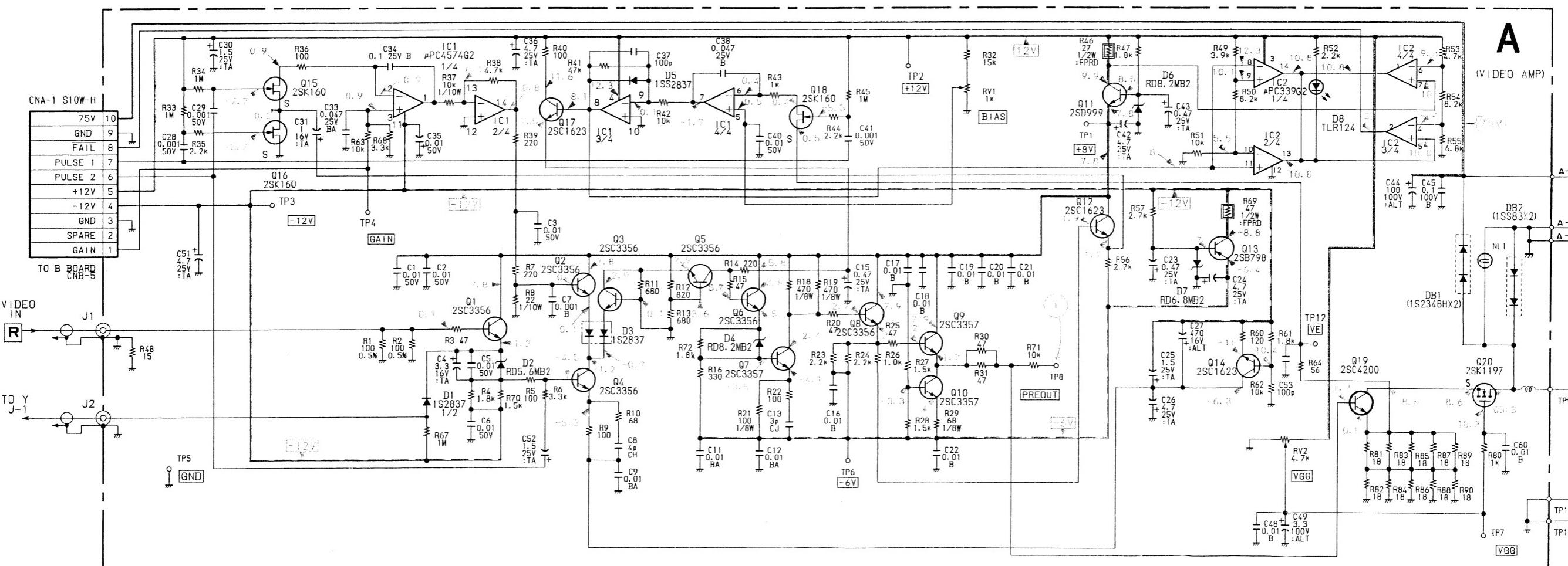
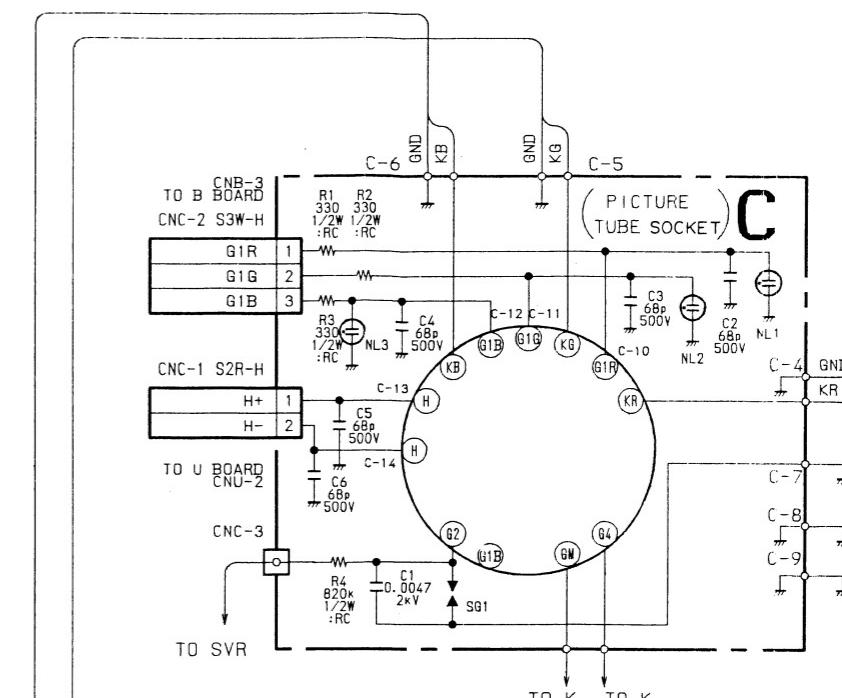
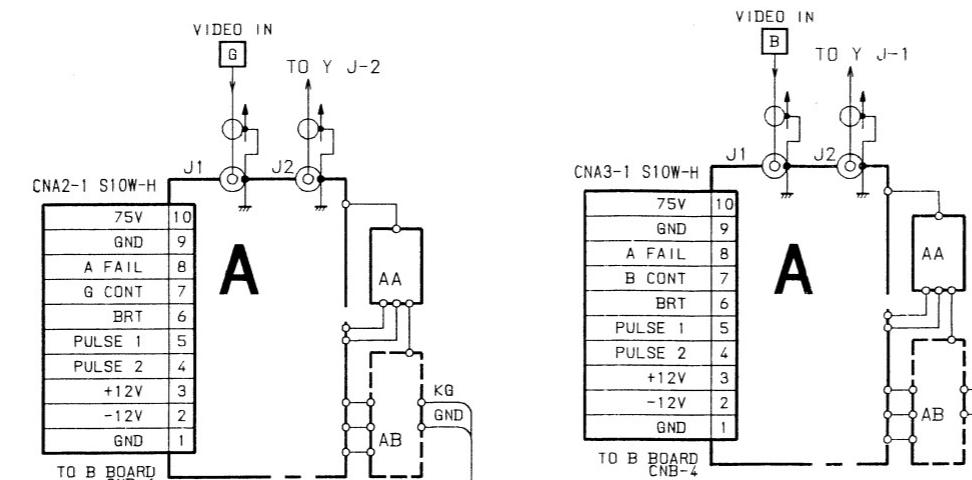
- : Pattern from the side which enables seeing
- : Pattern of the rear side.

**NOTE:**

The circuit indicated as left contains high voltage of over 600 Vp-p. Care must be paid to prevent an electric shock in inspection or repairing.

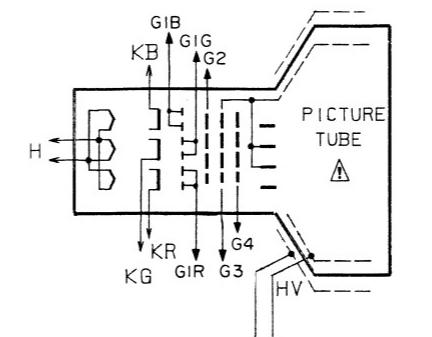
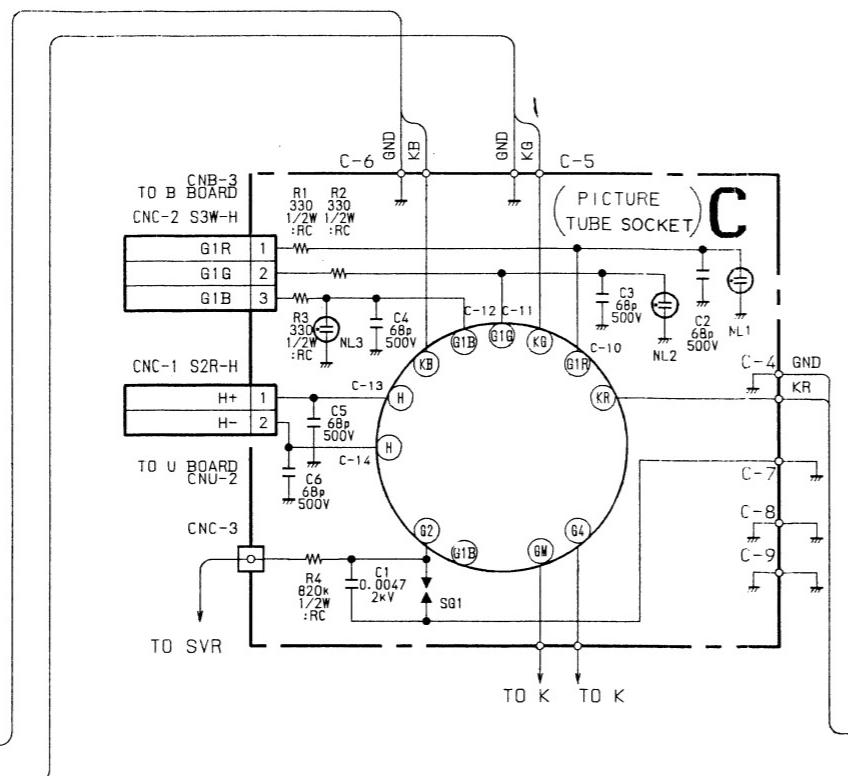
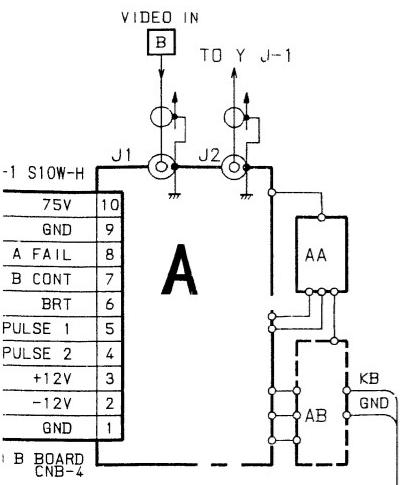
**A** •A, AA, AB BOARDS (DDM-2801C, Serial No. up-to 2,000,013) (DDM-2801C2, Serial No. up-to 2,000,003)  
(DDM-2802C, Serial No. 10,001—10,003) (DDM-2802C2, Serial No. up-to 2,000,001)

- C BOARD (DDM-2801C, Serial No. up-to 2,000,018) (DDM-2801C2, Serial No. up-to 2,000,000)  
(DDM-2802C, Serial No. 10,001—10,003) (DDM-2802C2, Serial No. up-to 2,000,000)



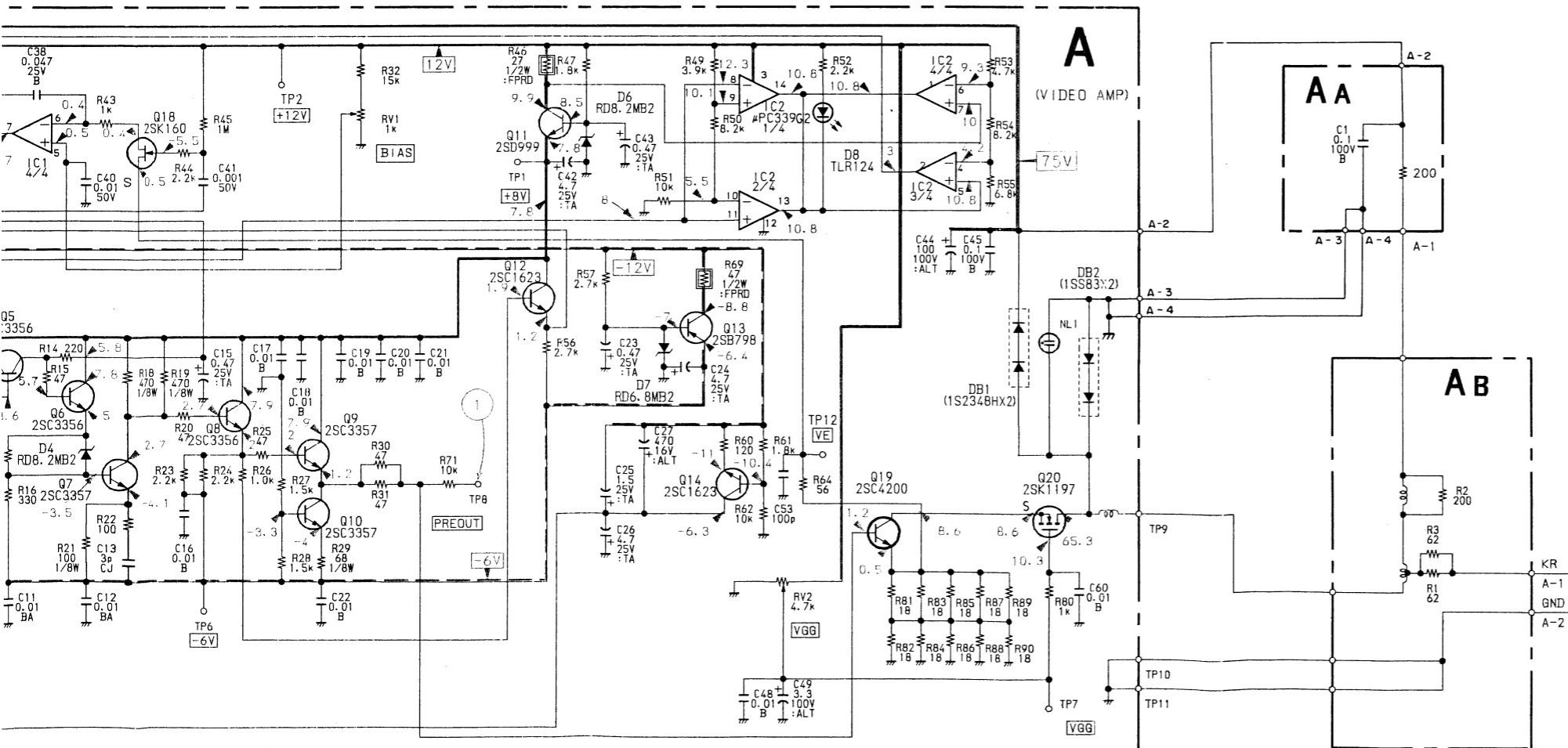
8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22

0,003)  
0,001)

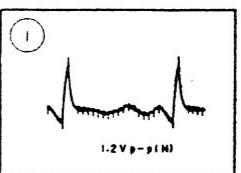


- A Board -

IC1	SAMPLE HOLD
2	FAIL DET
Q1	INPUT BUFF
2	GAIN CONT 1
3	GAIN CONT 2
4	V-I CONV
5	BUFF 1
6	BUFF 2
7	AMP
8	BUFF 3
9	PRE DRIVE
10	CURRENT SOURCE 1
11	+8V REG
12	BUFF 4
13	-6V REG
14	CURRENT SOURCE 2
15	GATE 1
16	GATE 2
17	BUFF 5
18	GATE 3
19	DRIVE
20	FINAL
D1	INPUT SWITCH
2	VOLTAGE SHIFT 1
3	ISOLATION
4	VOLTAGE SHIFT 2
5	CLAMP
6	+8V REG
7	-6V REG
8	FAIL IND

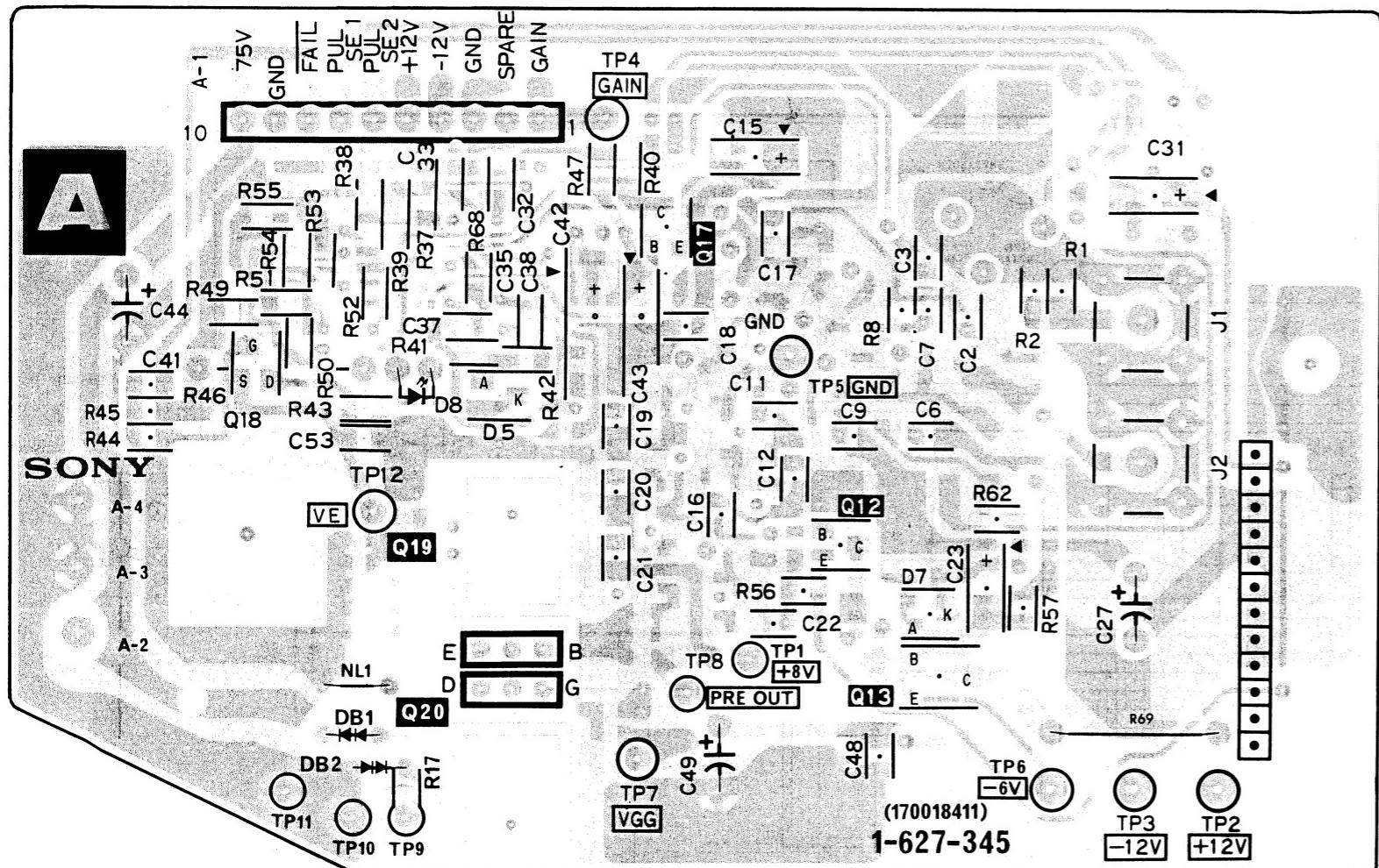


- A Board -

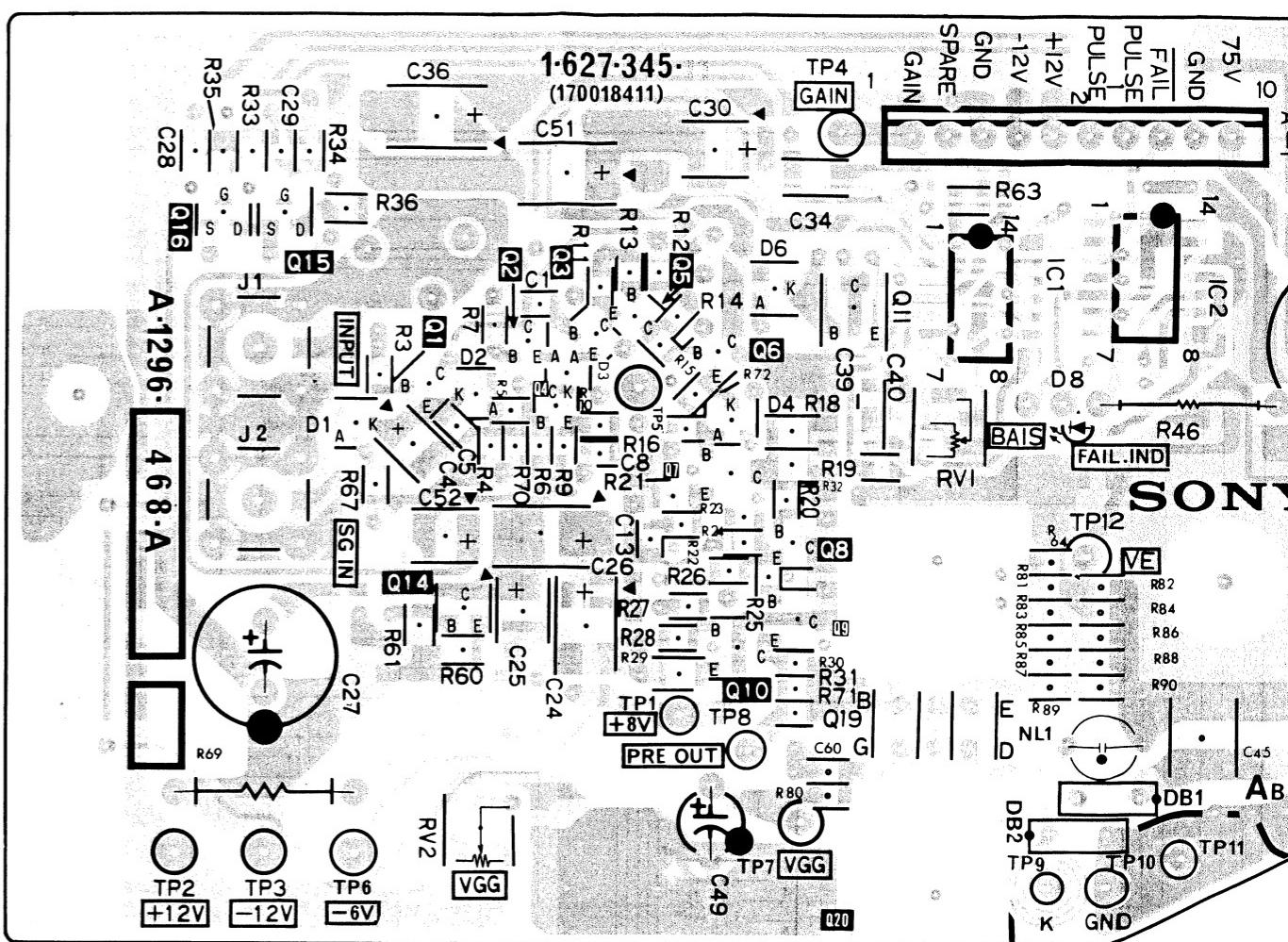


**A** (VIDEO AMP)

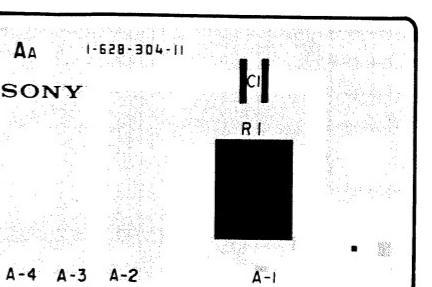
—A BOARD— —Conductor side— (DDM-2801C, Serial No. up-to 2,000,013) (DDM-2801C2; Serial No. up-to 2,000,003)  
(DDM-2802C, Serial No. 10,001—10,003) (DDM-2802C2; Serial No. up-to 2,000,001)



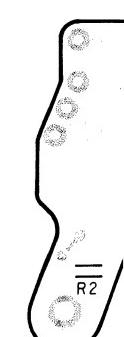
—A BOARD— —Compornt side— (DDM-2801C; Serial No. up-to 2,000,013) (DDM-2801C2; Serial No. up-to  
(DDM-2802C; Serial No. 10,001—10,003) (DDM-2802C2; Serial No. up-to



-AA Board-



-AB Bot

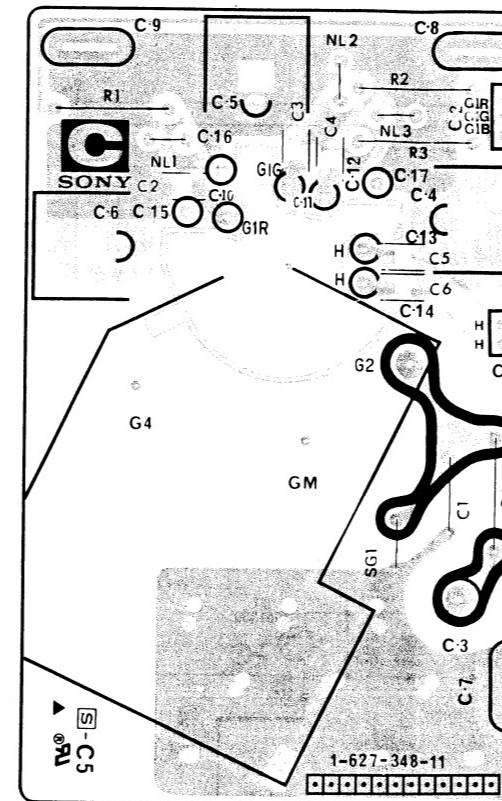
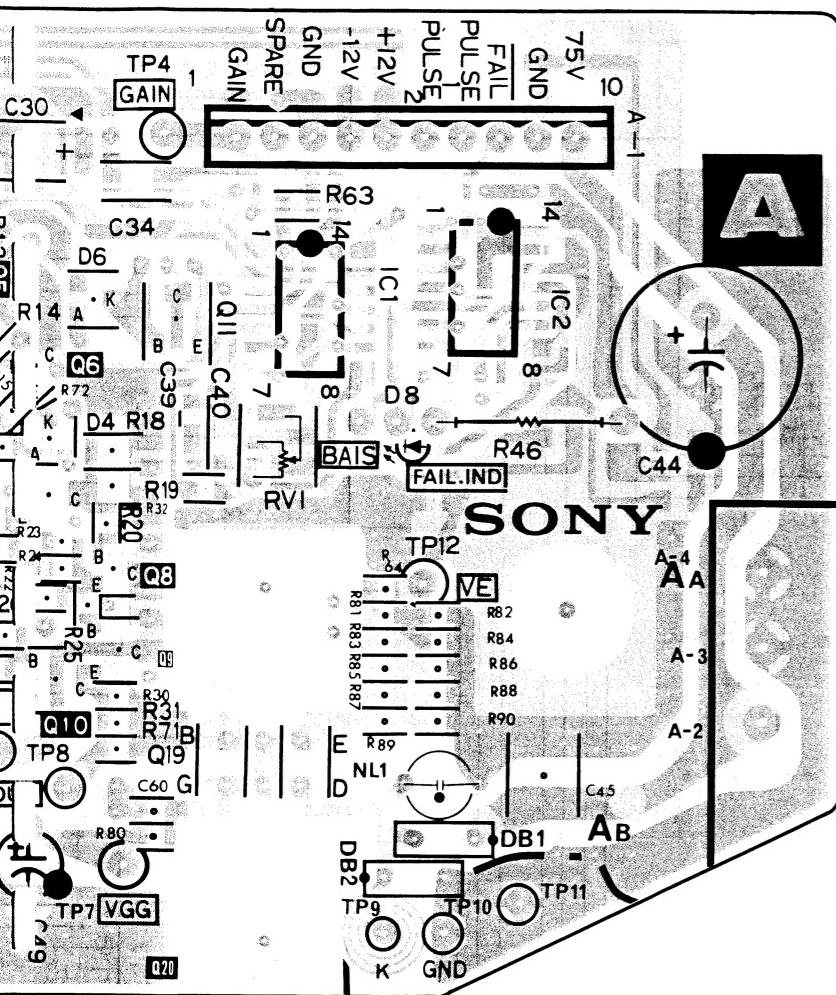


**A      AA      AB      C**

(PICTURE TUBE SOCKET)

Nº up-to 2,000,013) (DDM-2801C2 ; Serial No. up-to 2,000,003  
Nº 10,001—10,003) (DDM-2802C2 ; Serial No. up-to 2,000,001

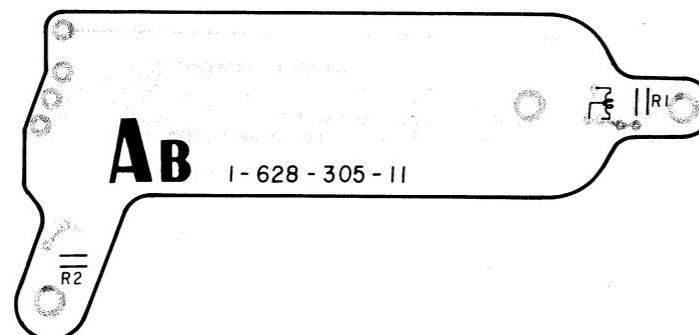
-C BOARD-



(DDM-2801C; Serial No. up-to 2,000,018)  
(DDM-2802C; Serial No. 10,001—10,003)  
(DDM-2801C2; Serial No. up-to 2,000,003)  
(DDM-2802C2; Serial No. up-to 2,000,001)

**NOTE:**  
The circuit indicated as left contains high voltage of over 600 Vp-p. Care must be paid to prevent an electric shock during inspection or repairing.

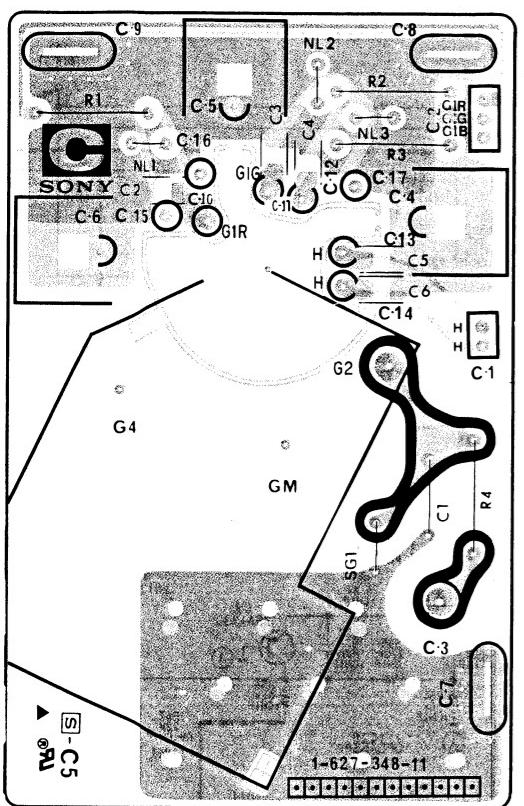
—AB Board—



- : Pattern from the side which enables seeing
  - : Pattern of the rear side.

O KET)

—C BOARD—



(DDM-2801C ; Serial No. up-to 2,000,018)  
(DDM-2802C ; Serial No. 10,001—10,003)  
(DDM-2801C2 ; Serial No. up-to 2,000,003)  
(DDM-2802C2 ; Serial No. up-to 2,000,001)

**NOTE:**

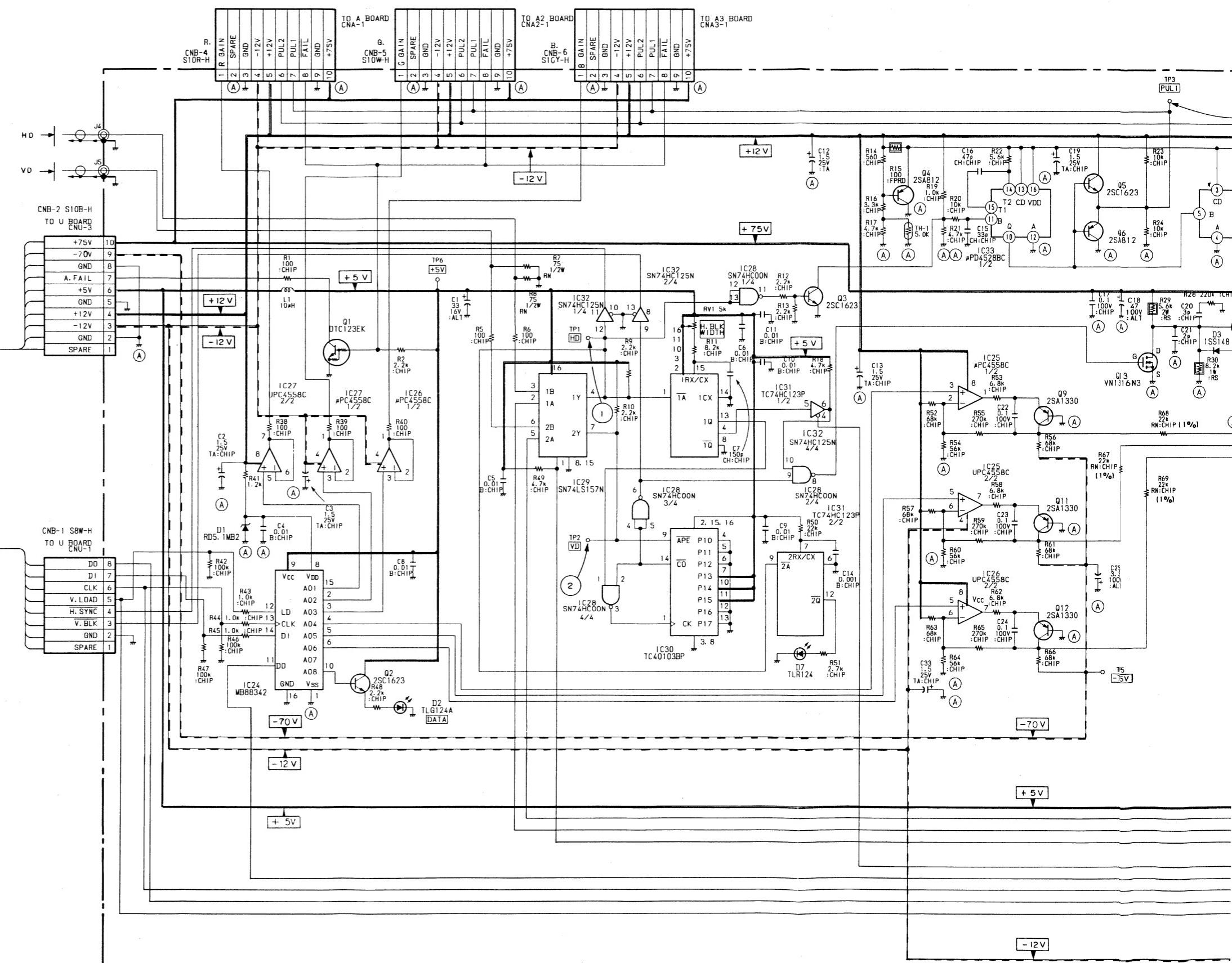
The circuit indicated as left contains high voltage of over 600 Vpp. Care must be paid to prevent an electric shock in inspection or repairing.

- : Pattern from the side which enables seeing
- : Pattern of the rear side.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

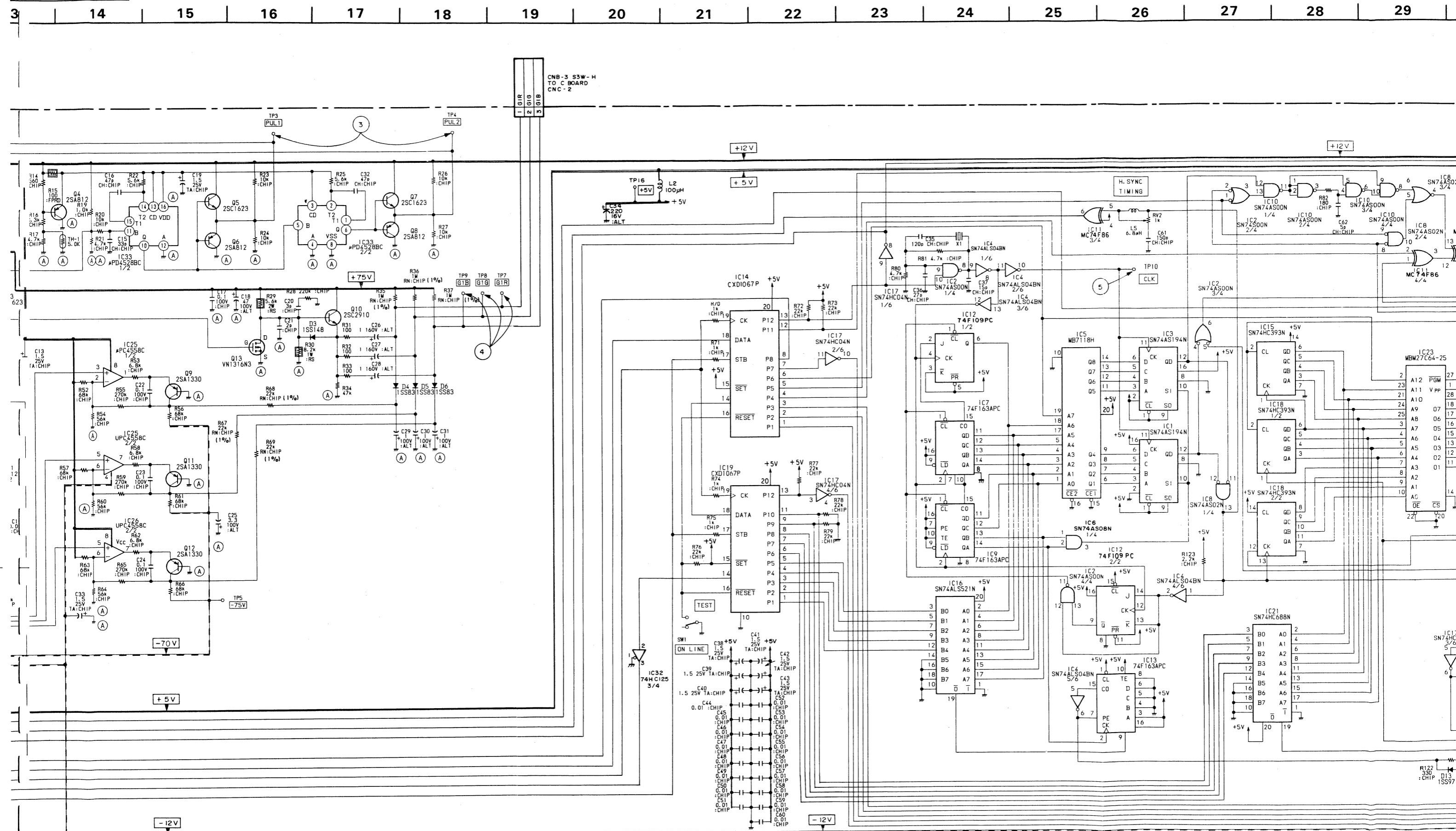
- B, U BOARDS (DDM-2801C, Serial No. up-to 2,000,018)
- (DDM-2802C, Serial No. 10,001–10,003)
- (DDM-2801C2; Serial No. up-to 2,000,003)
- (DDM-2802C2; Serial No. up-to 2,000,001)

A



NOTE:

	Digital GND
	Analog GND



20

21

22

23

24

25

26

27

28

29

30

31

32

33

34

35

A

B

C

D

E

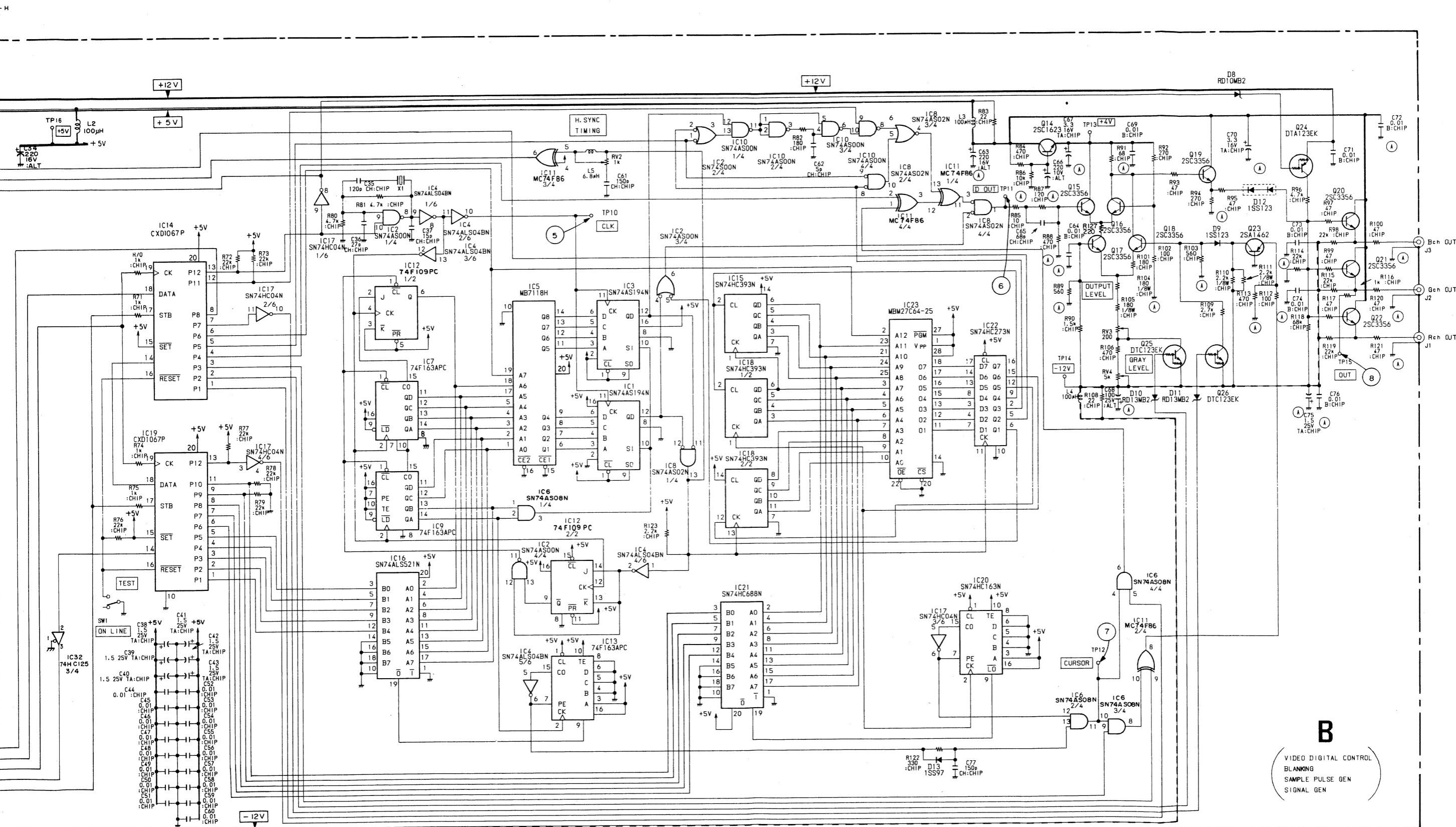
F

G

H

I

J



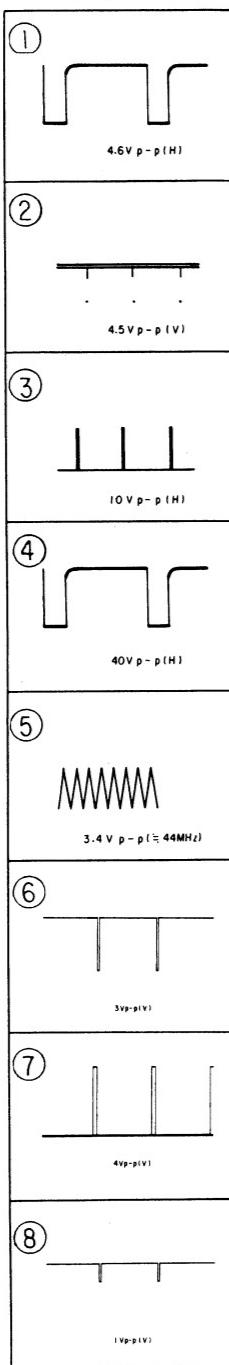
B

[VIDEO DIGITAL CONTROL, BLANKING, SAMPLE PULSE GEN, SIGNAL GEN]

-B Board-

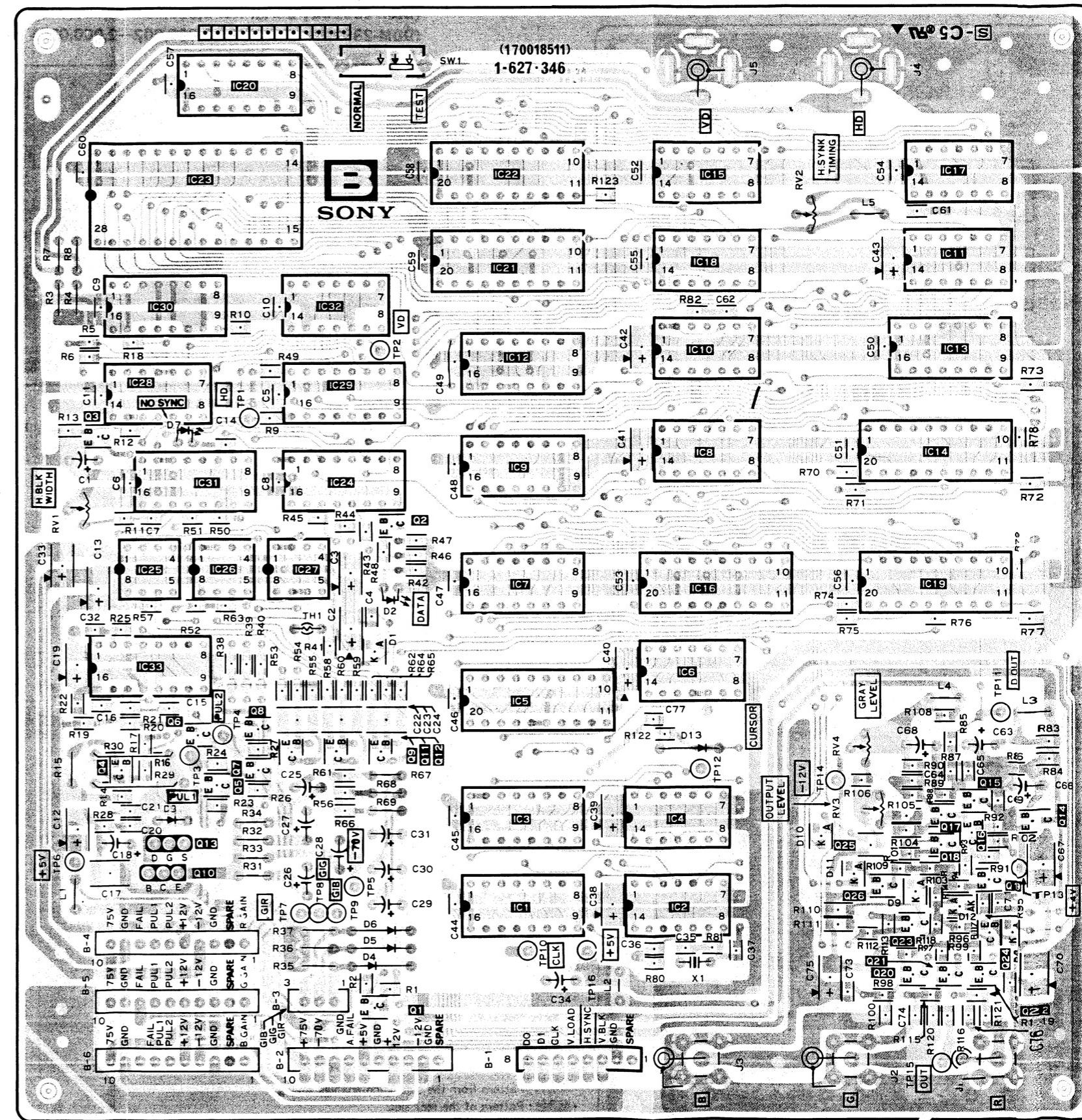
IC1	COUNTOR-1
2	NAND-1
3	COUNTOR-2
4	INV-1
5	H-PATN-MEMORY
6	AND
7	COUNTOR-3
8	NOR
9	COUNTOR-4
10	NAND-2
11	EX-OR
12	COUNTOR-5
13	COUNTOR-6
14	LATCH-SG
15	COUNTOR-7
16	COMPARATOR-H
17	INV-2
18	COUNTOR-8
19	LATCH-CURSOR
20	COUNTOR-9
21	COMPARATOR-V
22	LATCH
23	V-PATN-MEMORY
24	DAC
25	AMP-1
26	AMP-2
27	AMP-3
28	NAND-3
29	SYNC-SWITCH
30	V-BLK-COUNTOR
31	H-BLK-GEN.
32	DRIV
33	PULSE-GEN.
Q1	A-FAIL-OUT
2	DATA-IND-DRIV
3	LEVEL-CONV
4	TEMP. COMPENSATE
5	PULSE DRIVE-1
6	PULSE DRIVE-2
7	PULSE DRIVE-3
8	PULSE DRIVE-4
9	G1-AMP-1
10	BLK-PULSE-DRIV
11	G1-AMP-2
12	G1-AMP-3
13	BLK-PULSE-AMP
14	+4V REG
15	SIG-SW-1
16	SIG-SW-2
17	CORSOR-SW-1
18	CORSOR-SW-2
19	BUFF
20	DRIV-R
21	DRIV-G
22	DRIV-B
23	CURSOR-SW-3
24	BIAS CONT
25	LEVEL CONT
26	CURSOR CONT
D1	+5V REG
2	DATA IND
3	SPEED UP
4	BLK-SW-R
5	BLK-SW-G
6	BLK-SW-B
7	NO SYNC IND
8	SW-1
9	
10	SW-2
11	SW-3
12	SW-4
13	CURSOR SHIFT

—B Board—



I C	Q	D	R V	T P
20				
23, 22, 15, 17			2	
21, 18, 11				
30, 32				
12, 10, 13				2
28, 29	3	7	1	
8, 14				
31, 24	9		1	
25, 26, 27	2			
7, 16, 19		2		
33		1		
6				
5				
6	8			11
	9, 11, 12	13	4	4
4	7		3	12
5				14
3, 4	15			
	13	3	3	
	17			
	16			
	10			
	25			
	18			
1, 2	19			
	26			
			5	
			7, 8, 9	
	23	6		
	21	5		
	20	4		
	24			
				10, 16
	22			
				15

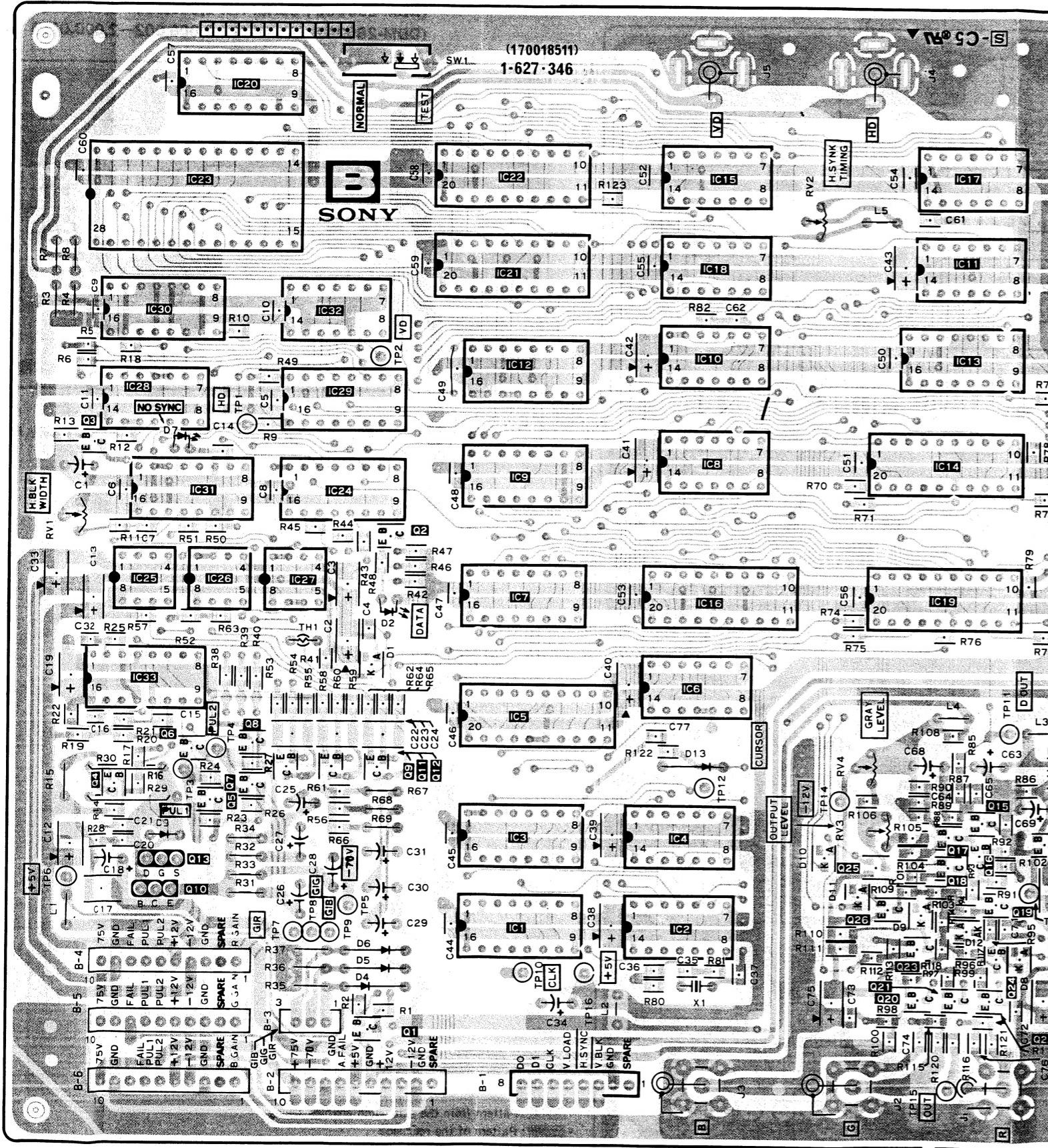
**—B BOARD—** (DDM-2801C, Serial No. up-to 2,000,018) (DDM-2801C2, Serial No. up-to 2,000,003)  
(DDM-2802C, Serial No. 10,001—10,003) (DDM-2802C2, Serial No. up-to 2,000,001)



B

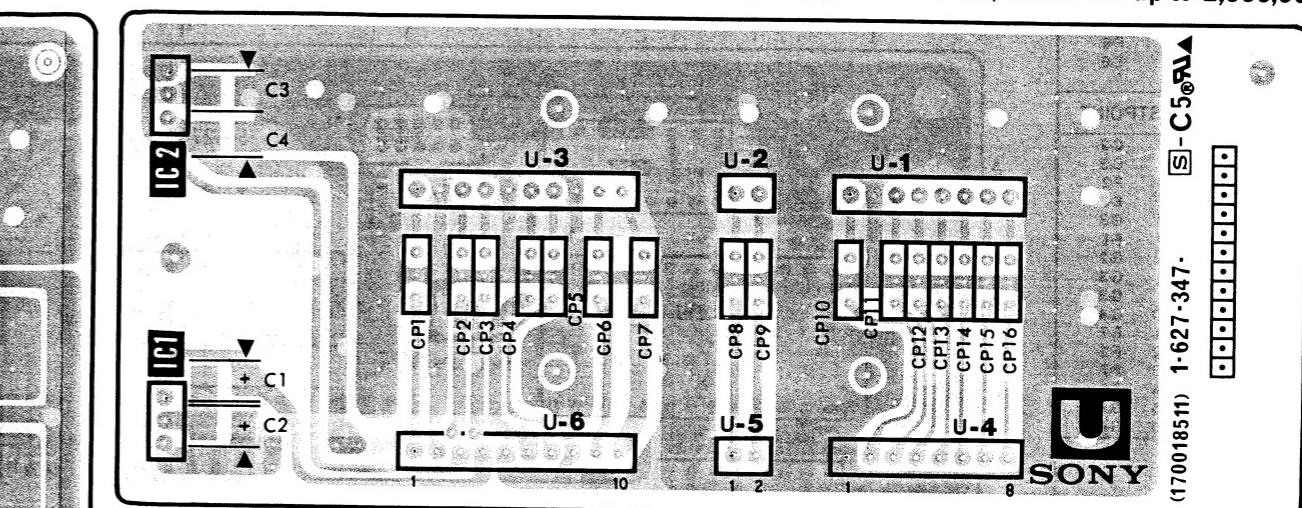
U

**—B BOARD—** (DDM-2801C, Serial No. up-to 2,000,018) (DDM-2801C2, Serial No. up-to 2,000,018)  
(DDM-2802C, Serial No. 10,001–10,003) (DDM-2802C2, Serial No. up-to 2,000,018)



1

**—U BOARD—** (DDM-2801C, Serial No. up-to 2,000,018) (DDM-2801C2, Serial No. up-to 2,000,003)  
(DDM-2802C, Serial No. 10,001—10,003) (DDM-2802C2, Serial No. up-to 2,000,001)



- : Pattern from the side which enables seeing
- : Pattern of the rear side.

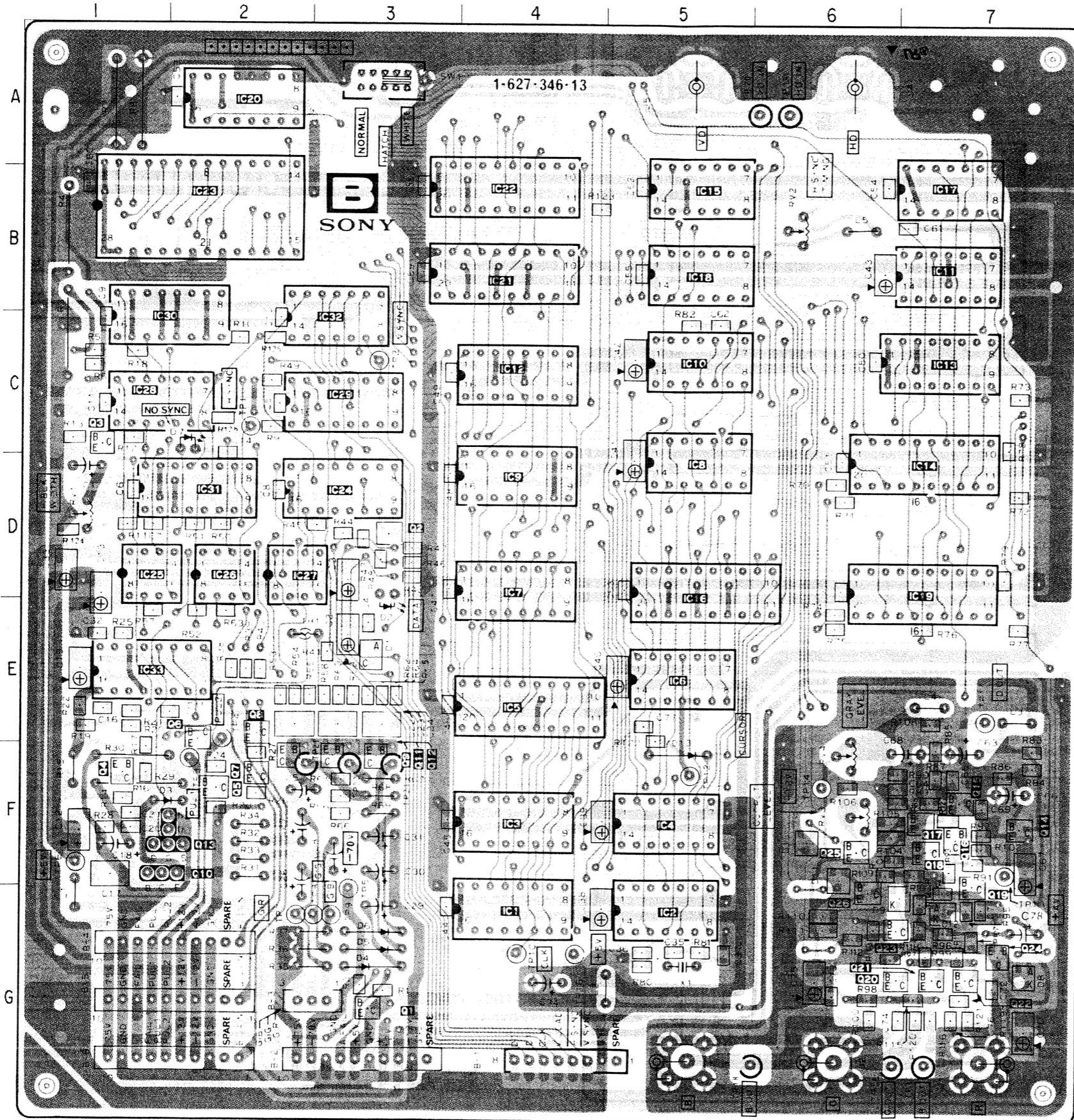
**B**

(VIDEO DIGITAL CONTROL, BLANKING, SIMPLE PULSE GEN, SIGNAL GEN)

—B BOARD— (DDM-2801C; Serial No. 2,000,019—2,000,043) (DDM-2801C2; Serial No. 2,000,004—2,000,049)  
(DDM-2802C; Serial No. 2,000,001—2,000,020) (DDM-2802C2; Serial No. 2,000,002—2,000,012)

—B Board—

IC	RV3	F-6
	RV4	E-6
<b>TESTPOINT</b>		
IC1	G-4	
IC2	G-5	
IC3	F-4	
IC4	F-5	
IC5	E-4	
IC6	E-5	
IC7	D-4	
IC8	D-5	
IC9	D-4	
IC10	C-5	
IC11	B-7	
IC12	C-4	
IC13	C-7	
IC14	D-7	
IC15	B-5	
IC16	D-5	
IC17	B-7	
IC18	B-5	
IC19	D-7	
IC20	A-2	
IC21	B-4	
IC22	B-4	
IC23	B-2	
IC24	D-3	
IC25	D-1	
IC26	D-2	
IC27	D-2	
IC28	C-1	
IC29	C-3	
IC30	C-1	
IC31	D-2	
IC32	C-3	
IC33	E-1	
<b>TRANSISTOR</b>		
Q1	G-3	
Q2	D-2	
Q3	C-1	
Q4	F-1	
Q5	F-2	
Q6	E-2	
Q7	F-2	
Q8	E-2	
Q9	F-2	
Q10	F-2	
Q11	F-3	
Q12	F-3	
Q13	F-3	
Q14	F-7	
Q15	F-7	
Q16	F-7	
Q17	F-7	
Q18	F-7	
Q19	F-7	
Q20	G-6	
Q21	G-7	
Q22	G-2	
Q23	G-7	
Q24	G-7	
Q25	F-6	
Q26	G-6	
<b>DIODE</b>		
D1	E-3	
D2	D-3	
D3	F-1	
D4	G-3	
D5	G-3	
D6	G-3	
D7	C-2	
D8	G-7	
D9	G-6	
D10	F-6	
D11	F-6	
D12	G-7	
D13	E-5	
<b>VARIABLE RESISTOR</b>		
RV1	D-1	
RV2	B-6	

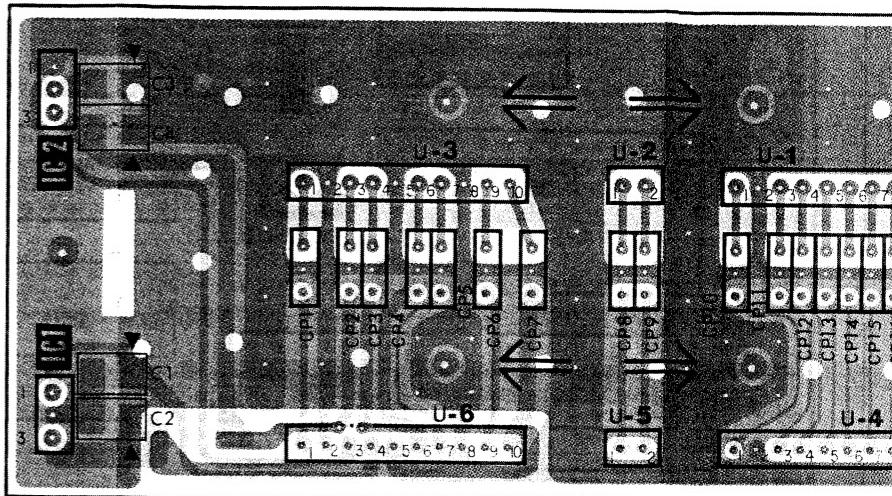


**B**

**U**

(FILTER)

—U BOARD— (DDM-2801C; Serial No. 2,000,019—2,000,043)  
(DDM-2802C; Serial No. 2,000,001—2,000,020)  
(DDM-2801C2; Serial No. 2,000,004—2,000,049)  
(DDM-2802C2; Serial No. 2,000,002—2,000,012)

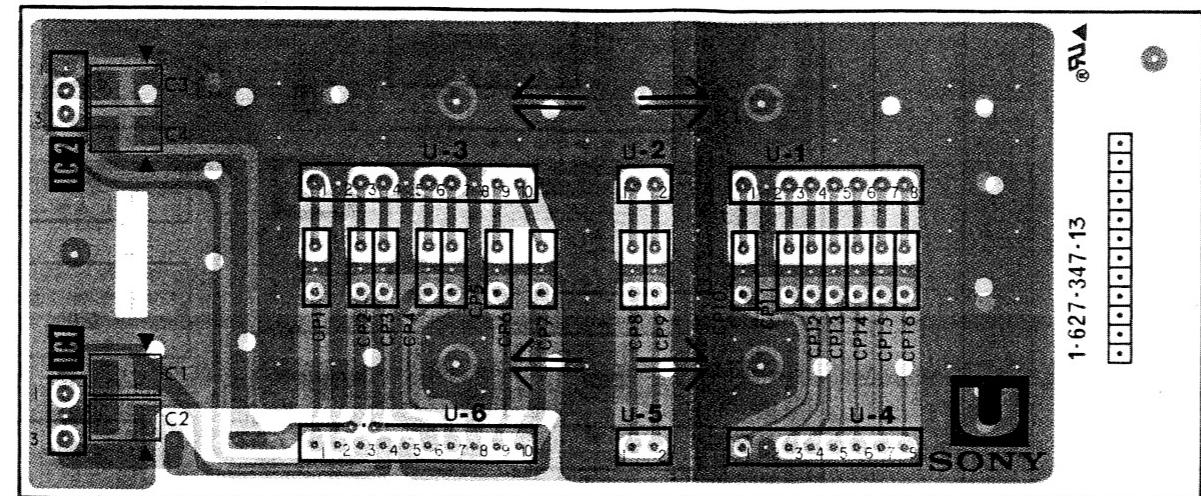
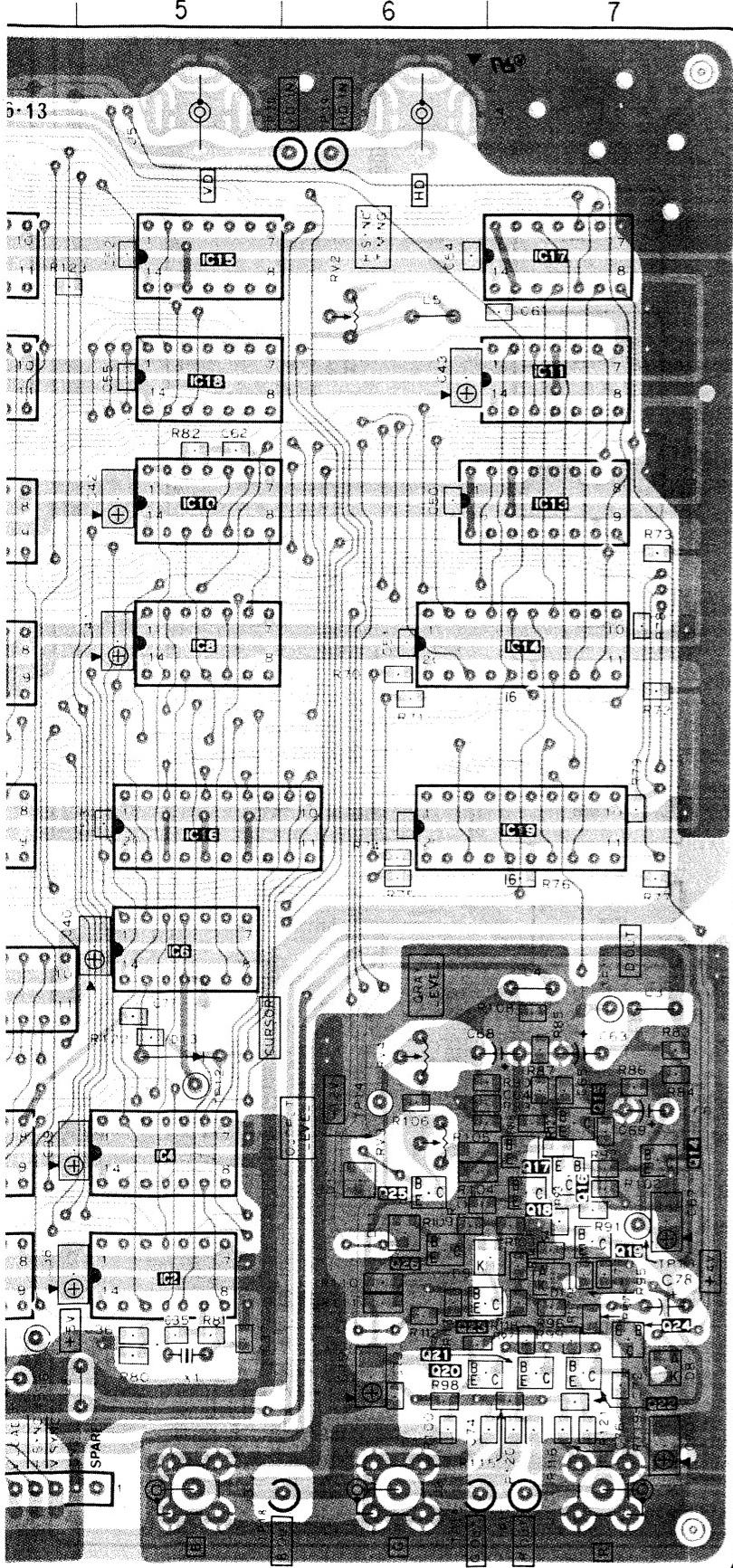


: Pattern from the side which enables seeing  
: Pattern of the rear side.

**B      U** (FILTER)

**—U BOARD— (DDM-2801C; Serial No. 2,000,019—2,000,043)  
(DDM-2802C; Serial No. 2,000,001—2,000,020)  
(DDM-2801C2; Serial No. 2,000,004—2,000,049)  
(DDM-2802C2; Serial No. 2,000,002—2,000,012)**

**1C2; Serial No. 2,000,004—2,000,049  
2C2; Serial No. 2,000,002—2,000,012**



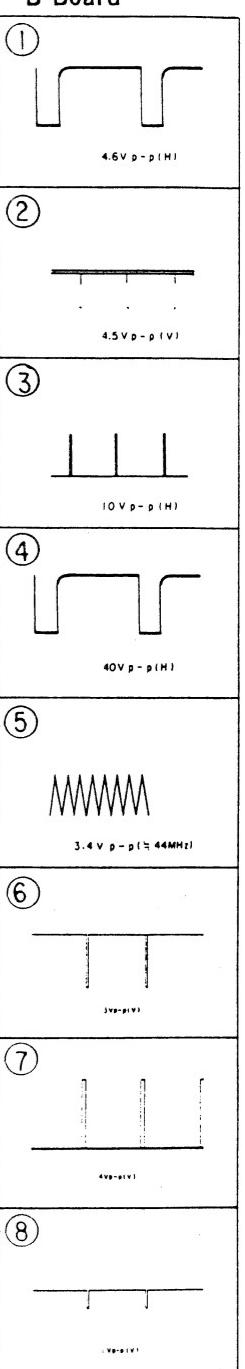
• : Pattern from the side which enables seeing  
• : Pattern of the rear side.

• : Pattern from the side which enables seeing  
• : Pattern of the rear side.

**—B Board—**

1C1	COUNTOR-1
2	NAND-1
3	COUNTOR-2
4	INV-1
5	H-PATN-MEMORY
6	AND
7	COUNTOR-3
8	NOR
9	COUNTOR-4
10	NAND-2
11	EX-OR
12	COUNTOR-5
13	COUNTOR-6
14	LATCH-SG
15	COUNTOR-7
16	COMPARATOR-H
17	INV-2
18	COUNTOR-8
19	LATCH-CURSOR
20	COUNTOR-9
21	COMPARATOR-V
22	LATCH
23	V-PATN-MEMORY
24	DAC
25	AMP-1
26	AMP-2
27	AMP-3
28	NAND-3
29	SYNC-SWITCH
30	V-BLK-COUNTOR
31	H-BLK-GEN.
32	DRIV
33	PULSE-GEN.
Q1	A-FAIL-OUT
2	DATA-IND-DRIV
3	LEVEL-CONV
4	TEMP. COMPENSATE
5	PULSE DRIVE-1
6	PULSE DRIVE-2
7	PULSE DRIVE-3
8	PULSE DRIVE-4
9	G1-AMP-1
10	BLK-PULSE-DRIV
11	G1-AMP-2
12	G1-AMP-3
13	BLK-PULSE-AMP
14	+4V REG
15	SIG-SW-1
16	SIG-SW-2
17	CORSOR-SW-1
18	CORSOR-SW-2
19	BUFF
20	DRIV-R
21	DRIV-G
22	DRIV-B
23	CURSOR-SW-3
24	BIAS CONT
25	LEVEL CONT
26	CURSOR CONT
D1	+5V REG
2	DATA IND
3	SPEED UP
4	BLK-SW-R
5	BLK-SW-G
6	BLK-SW-B
7	NO SYNC IND
8	SW-1
9	
10	SW-2
11	SW-3
12	SW-4
13	CURSOR SHIFT

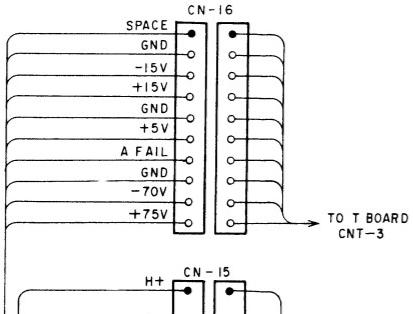
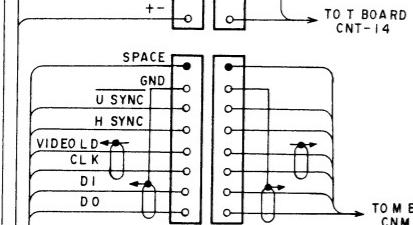
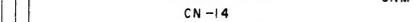
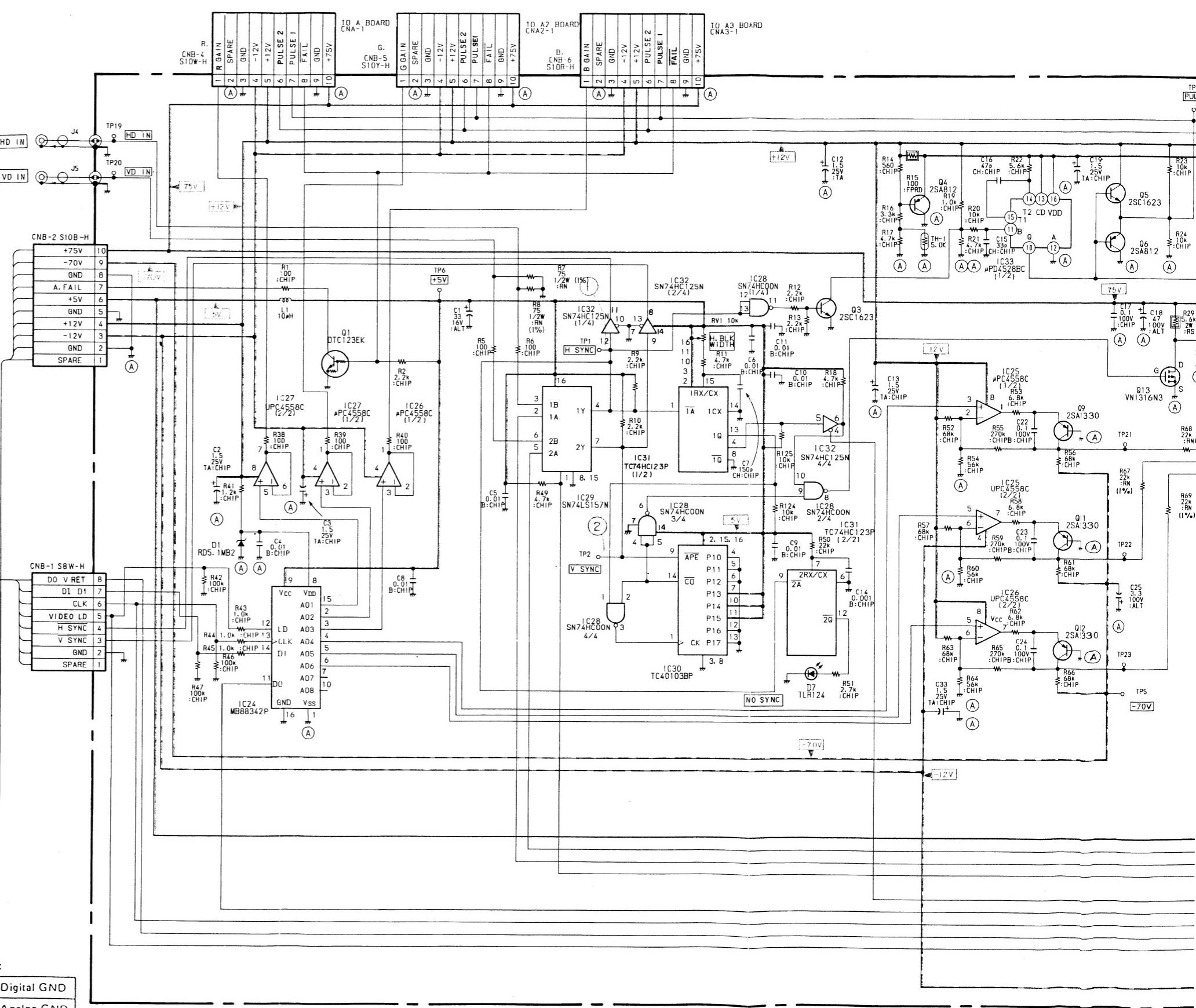
**—B Board—**



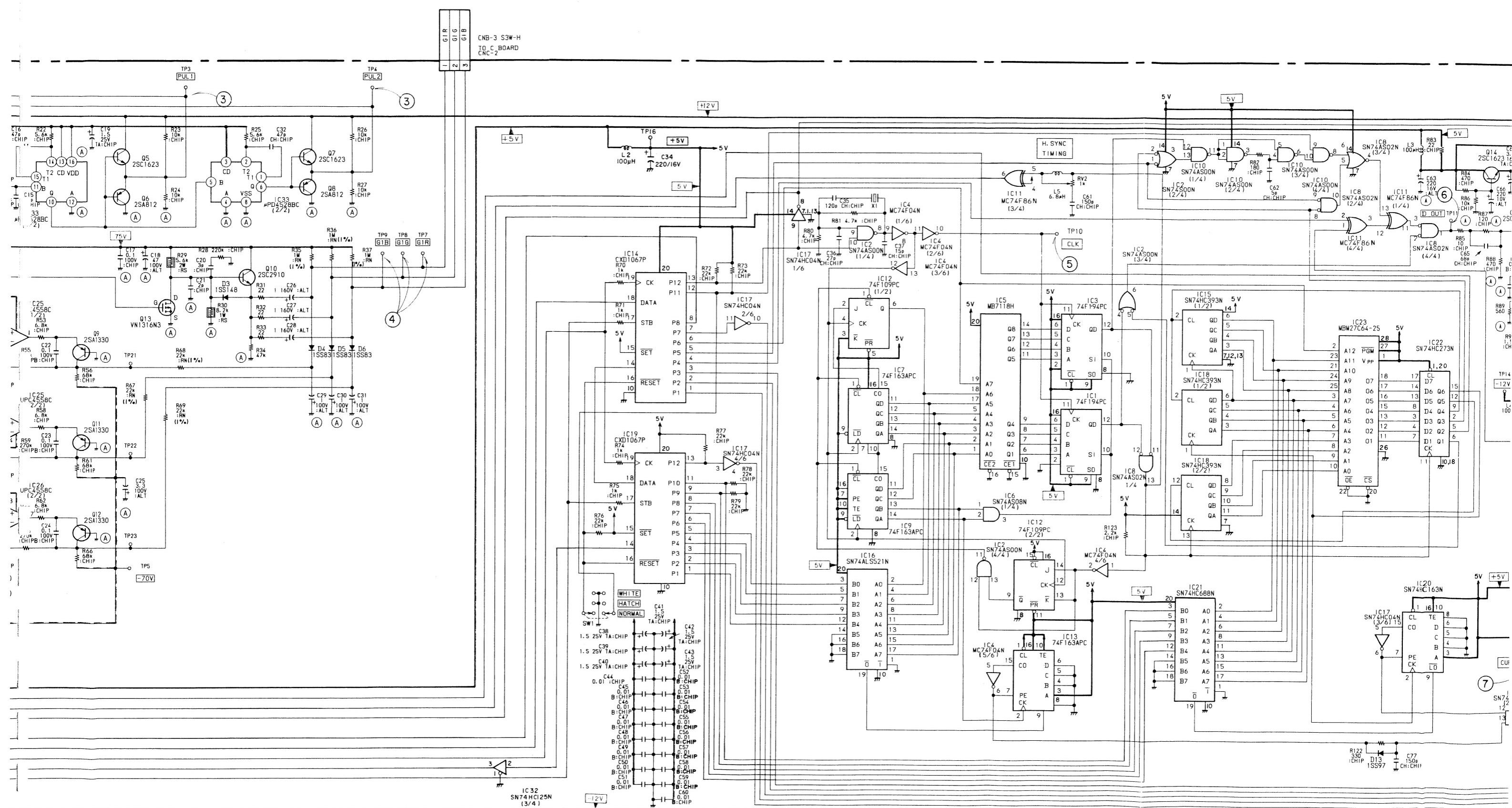
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

**A**

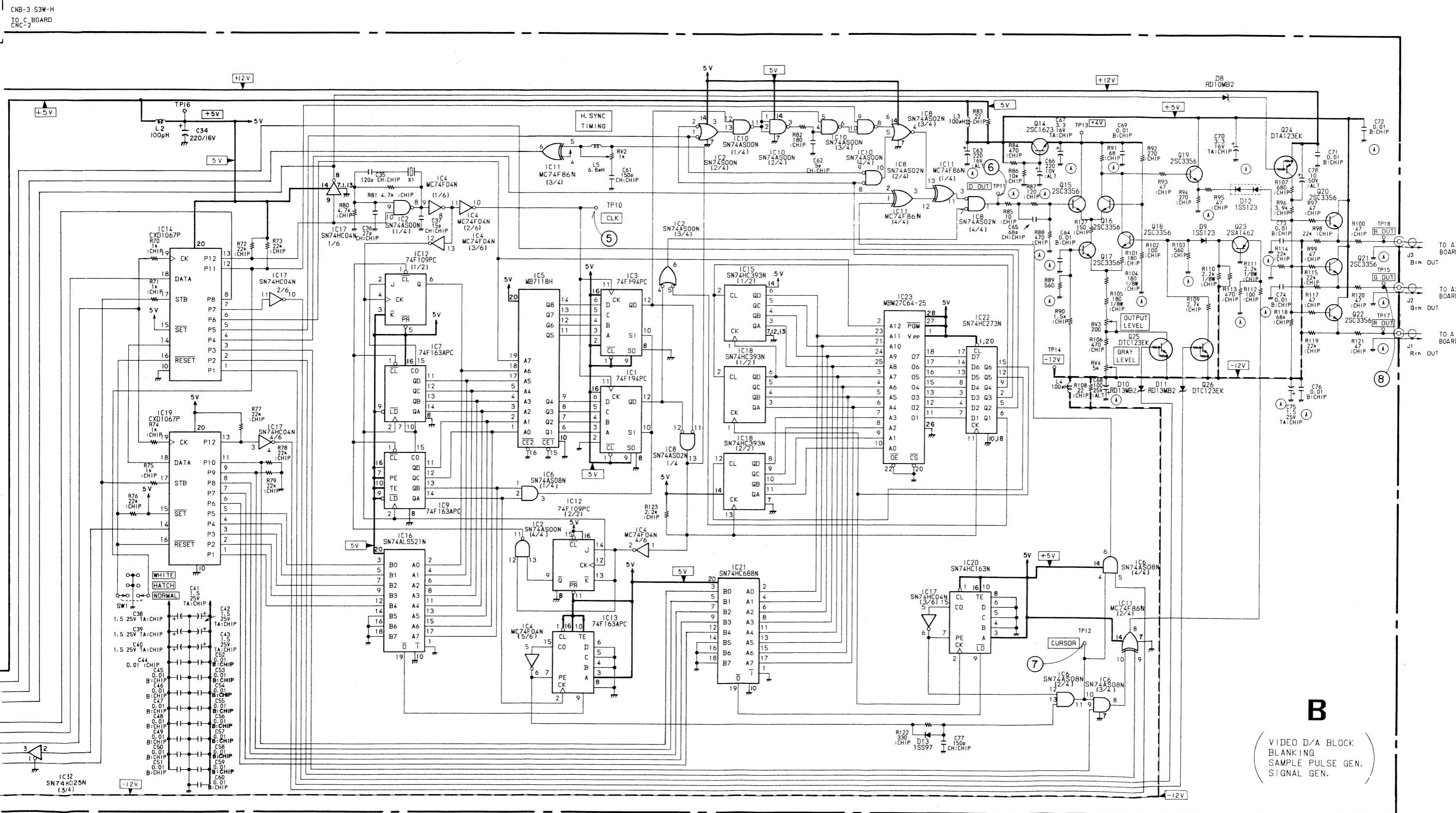
- **B and U BOARDS**
- (DDM-2801C; Serial No. 2,000,019—2,000,043)
- (DDM-2802C; Serial No. 2,000,001—2,000,020)
- (DDM-2801C2; Serial No. 2,000,004—2,000,049)
- (DDM-2802C2; Serial No. 2,000,002—2,000,012)

**B****C****D****E****F****G****H****I****J**

15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 3



20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35

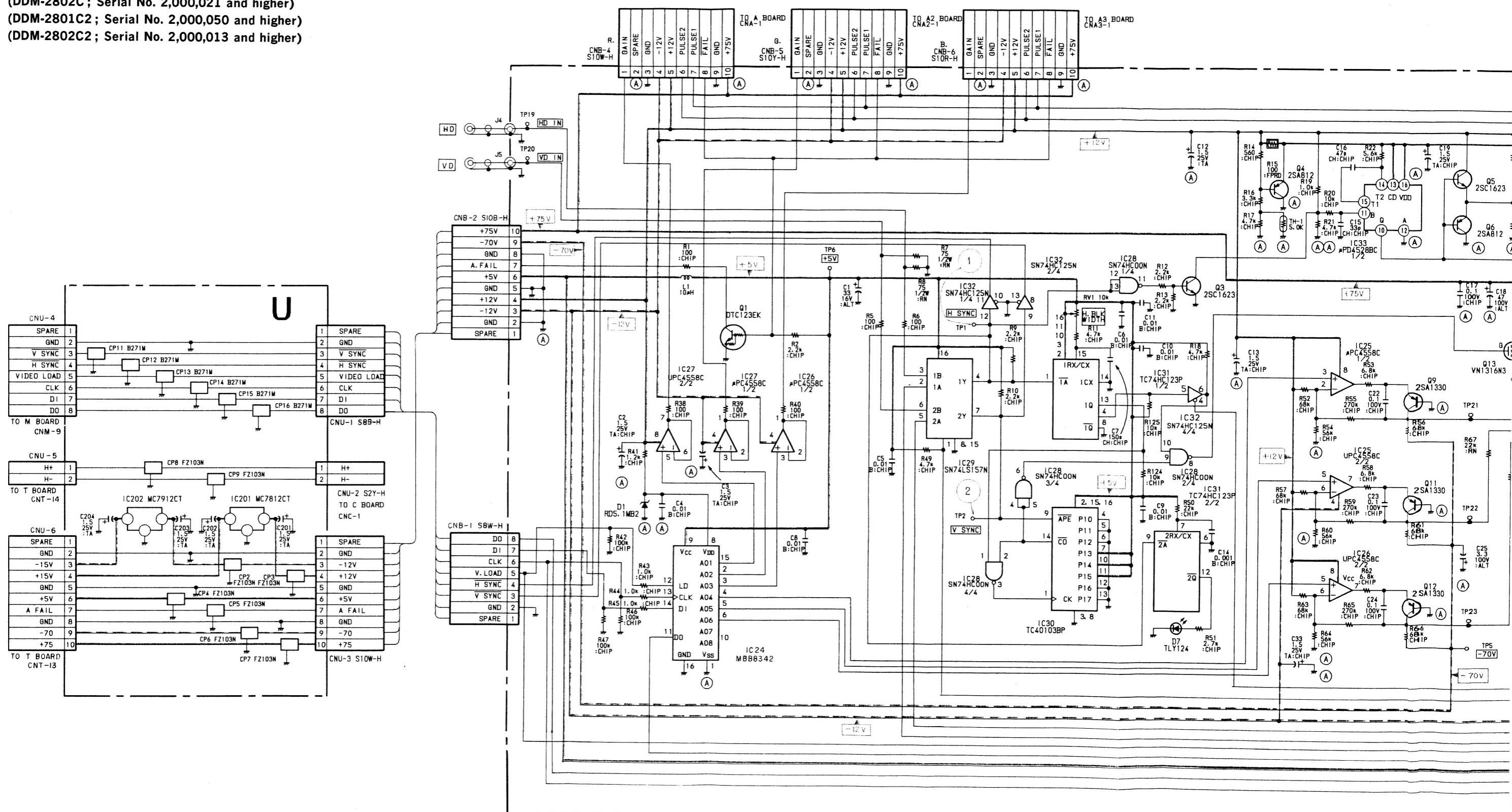


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

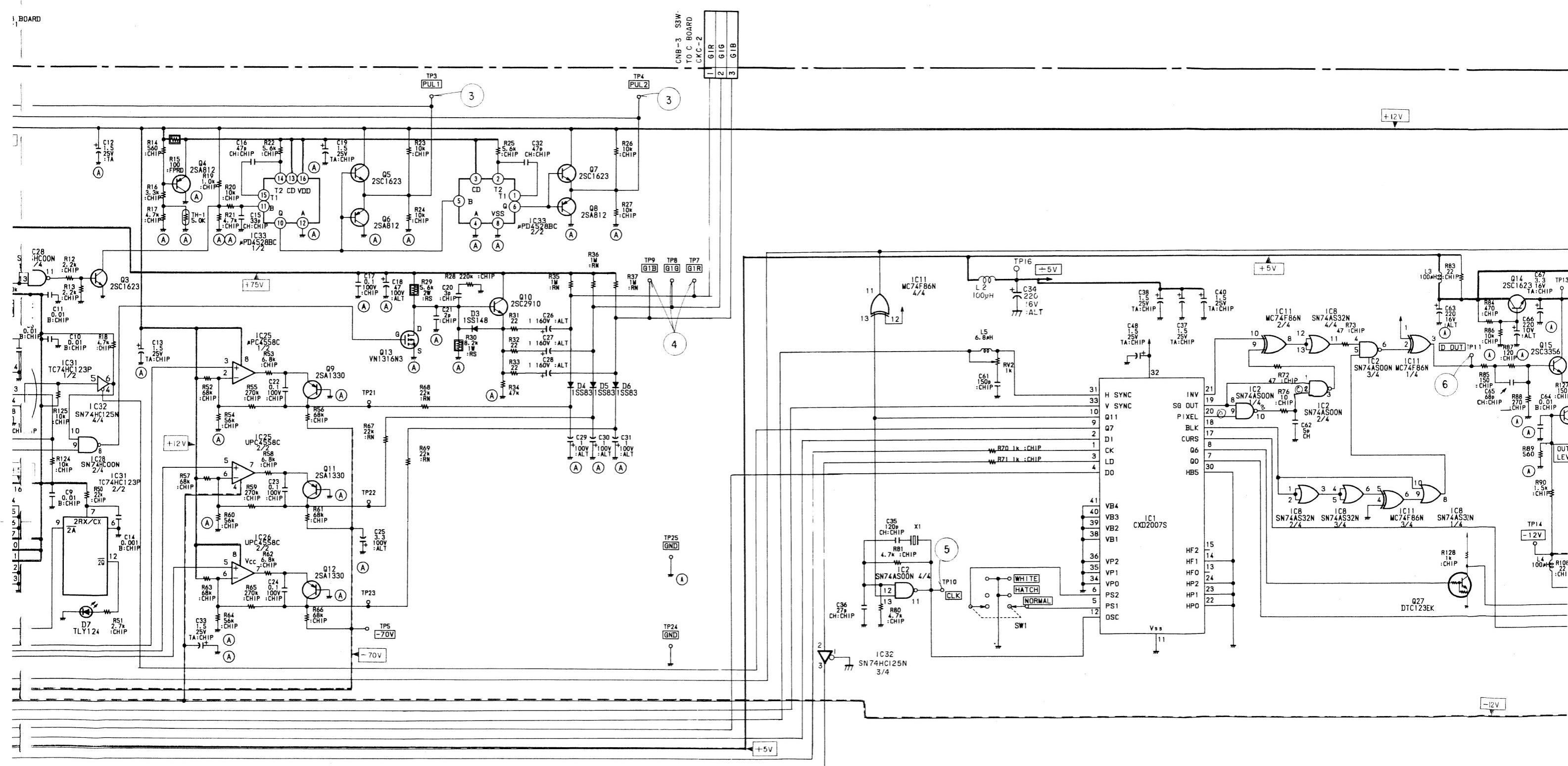
**A**

**B and U BOARDS**

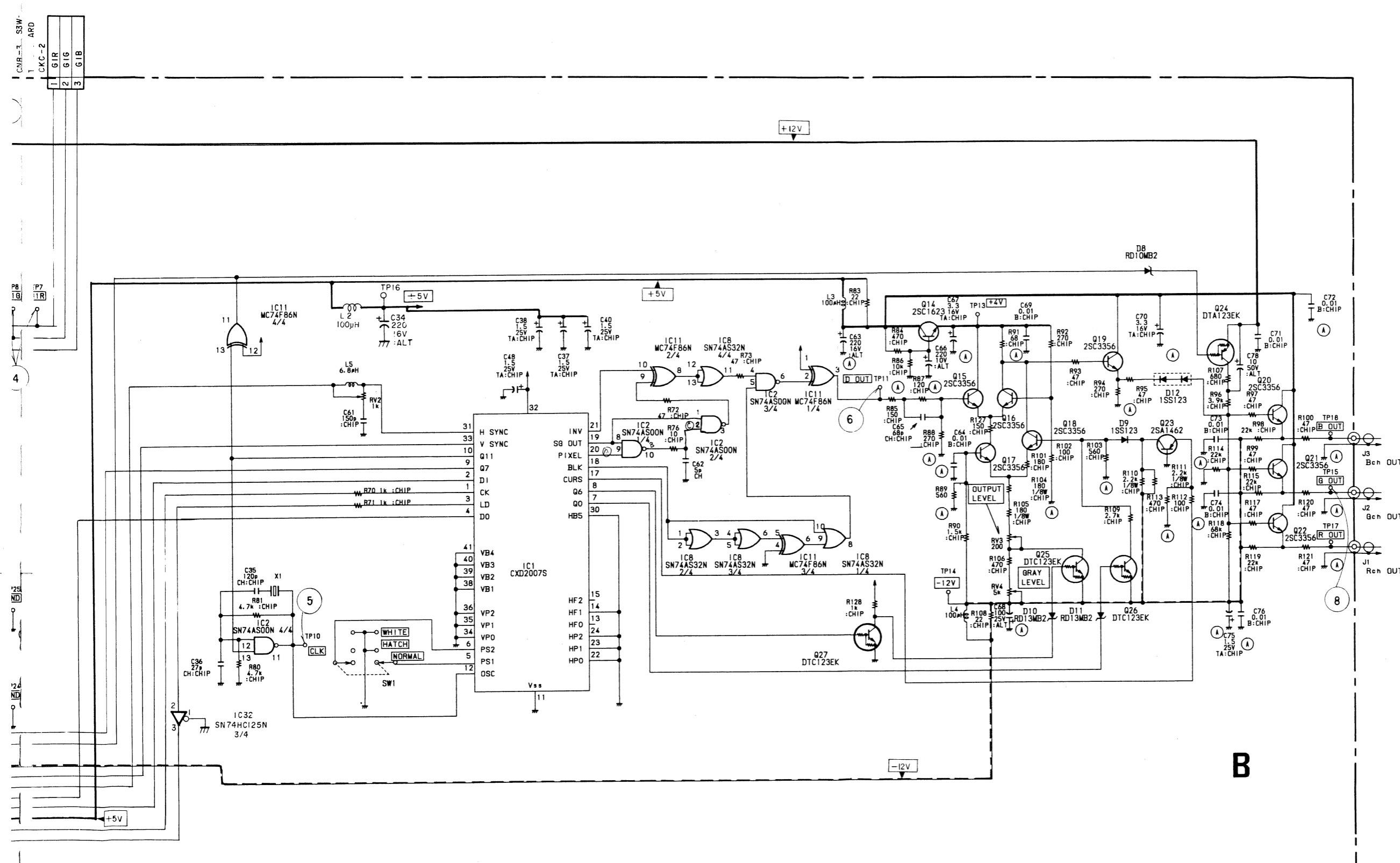
(DDM-2801C; Serial No. 2,000,044 and higher)  
(DDM-2802C; Serial No. 2,000,021 and higher)  
(DDM-2801C2; Serial No. 2,000,050 and higher)  
(DDM-2802C2; Serial No. 2,000,013 and higher)



13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29



20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34



B

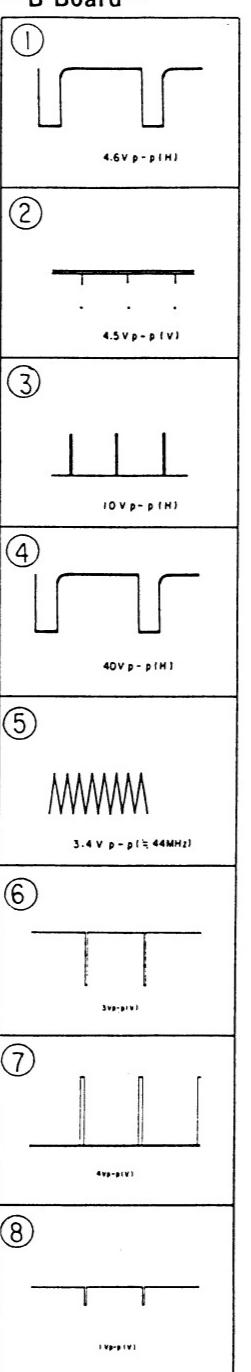
NOTE:

	Digital GND
	Analog GND

—B Board—

IC1	COUNTER-1
2	NAND-1
3	COUNTER-2
4	INV-1
5	H-PATN-MEMORY
6	AND
7	COUNTER-3
8	NOR
9	COUNTER-4
10	NAND-2
11	EX-OR
12	COUNTER-5
13	COUNTER-6
14	LATCH-SG
15	COUNTER-7
16	COMPARATOR-H
17	INV-2
18	COUNTER-8
19	LATCH-CURSOR
20	COUNTER-9
21	COMPARATOR-V
22	LATCH
23	V-PATN-MEMORY
24	DAC
25	AMP-1
26	AMP-2
27	AMP-3
28	NAND-3
29	SYNC-SWITCH
30	V-BLK-COUNTER
31	H-BLK-GEN.
32	DRIV
33	PULSE-GEN.
Q1	A-FAIL-OUT
2	DATA-IND-DRIV
3	LEVEL-CONV
4	TEMP. COMPENSATE
5	PULSE DRIVE-1
6	PULSE DRIVE-2
7	PULSE DRIVE-3
8	PULSE DRIVE-4
9	G1-AMP-1
10	BLK-PULSE-DRIV
11	G1-AMP-2
12	G1-AMP-3
13	BLK-PULSE-AMP
14	+4V REG
15	SIG-SW-1
16	SIG-SW-2
17	CORSOR-SW-1
18	CORSOR-SW-2
19	BUFF
20	DRIV-R
21	DRIV-G
22	DRIV-B
23	CURSOR-SW-3
24	BIAS CONT
25	LEVEL CONT
26	CURSOR CONT
D1	+5V REG
2	DATA IND
3	SPEED UP
4	BLK-SW-R
5	BLK-SW-G
6	BLK-SW-B
7	NO SYNC IND
8	SW-1
9	
10	SW-2
11	SW-3
12	SW-4
13	CURSOR SHIFT

—B Board—



—B BOARD—

IC		TP17	H-2
IC1	F-4	TP18	G-1
IC2	E-5	TP19	G-7
IC8	G-5	TP20	G-7
IC11	F-5	TP21	B-3
IC24	C-7	TP22	A-3
IC25	B-5	TP23	B-3
IC26	B-5	TP24	G-8
IC27	A-5	TP25	B-8
IC28	E-6		
IC29	G-6		
IC30	E-7		
IC31	F-6		
IC32	F-7		
IC33	B-7		

TRANSISTOR			
Q1	C-2		
Q3	C-8		
Q4	A-7		
Q5	A-6		
Q6	A-6		
Q7	B-6		
Q8	B-6		
Q9	B-3		
Q10	B-4		
Q11	A-3		
Q12	A-3		
Q13	B-4		
Q14	F-2		
Q15	F-2		
Q16	F-2		
Q17	F-2		
Q18	F-2		
Q19	F-2		
Q20	G-1		
Q21	G-2		
Q22	G-2		
Q23	G-1		
Q24	G-2		
Q25	F-1		
Q26	F-1		
Q27	D-3		

DIODE			
D1	C-7		
D3	B-4		
D4	C-3		
D5	C-3		
D6	C-3		
D7	D-5		
D8	G-2		
D9	F-1		
D10	F-1		
D11	F-1		
D12	F-2		

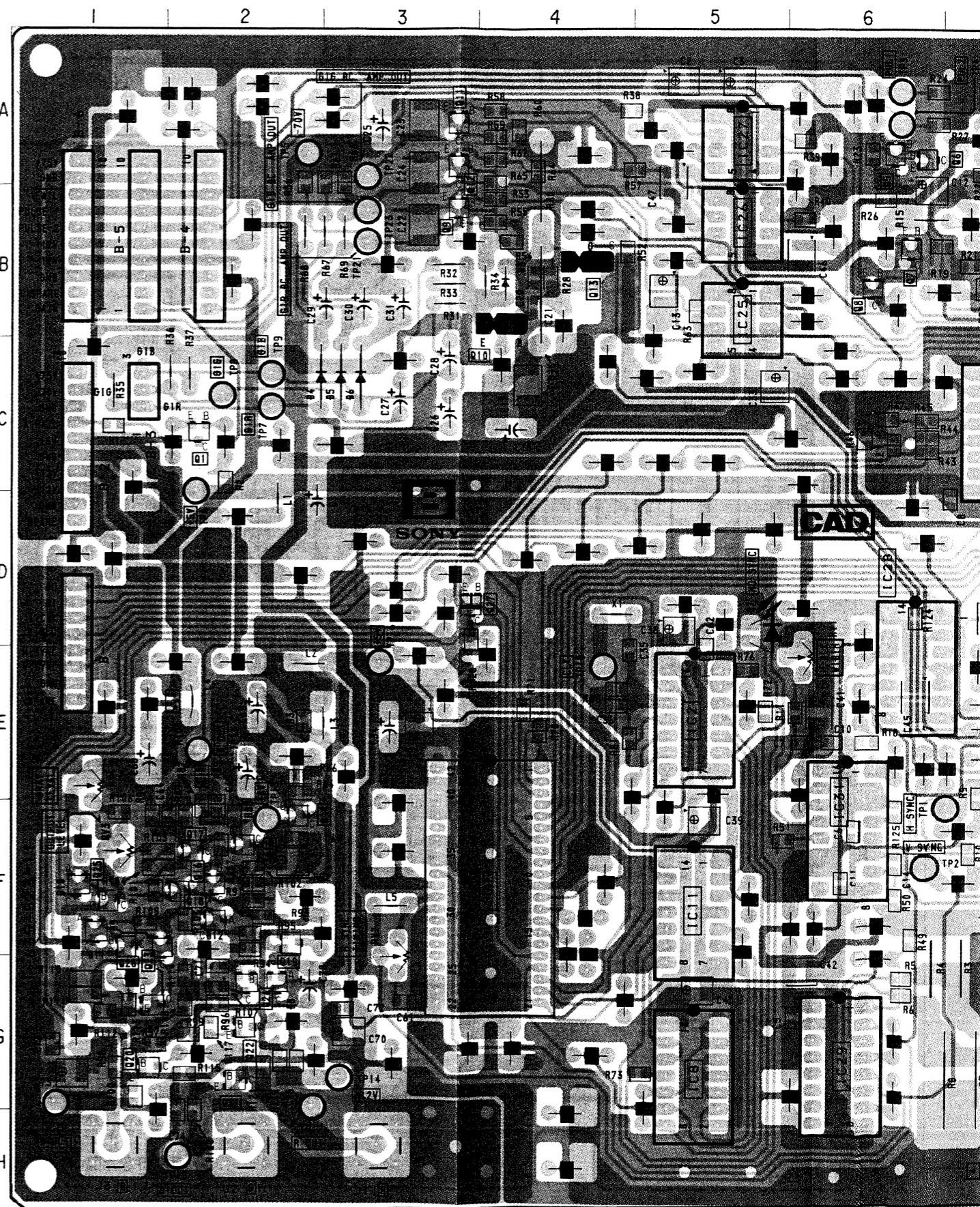
  

VARIABLE RESISTOR			
RV1	E-6		
RV2	F-3		
RV3	F-1		
RV4	E-1		

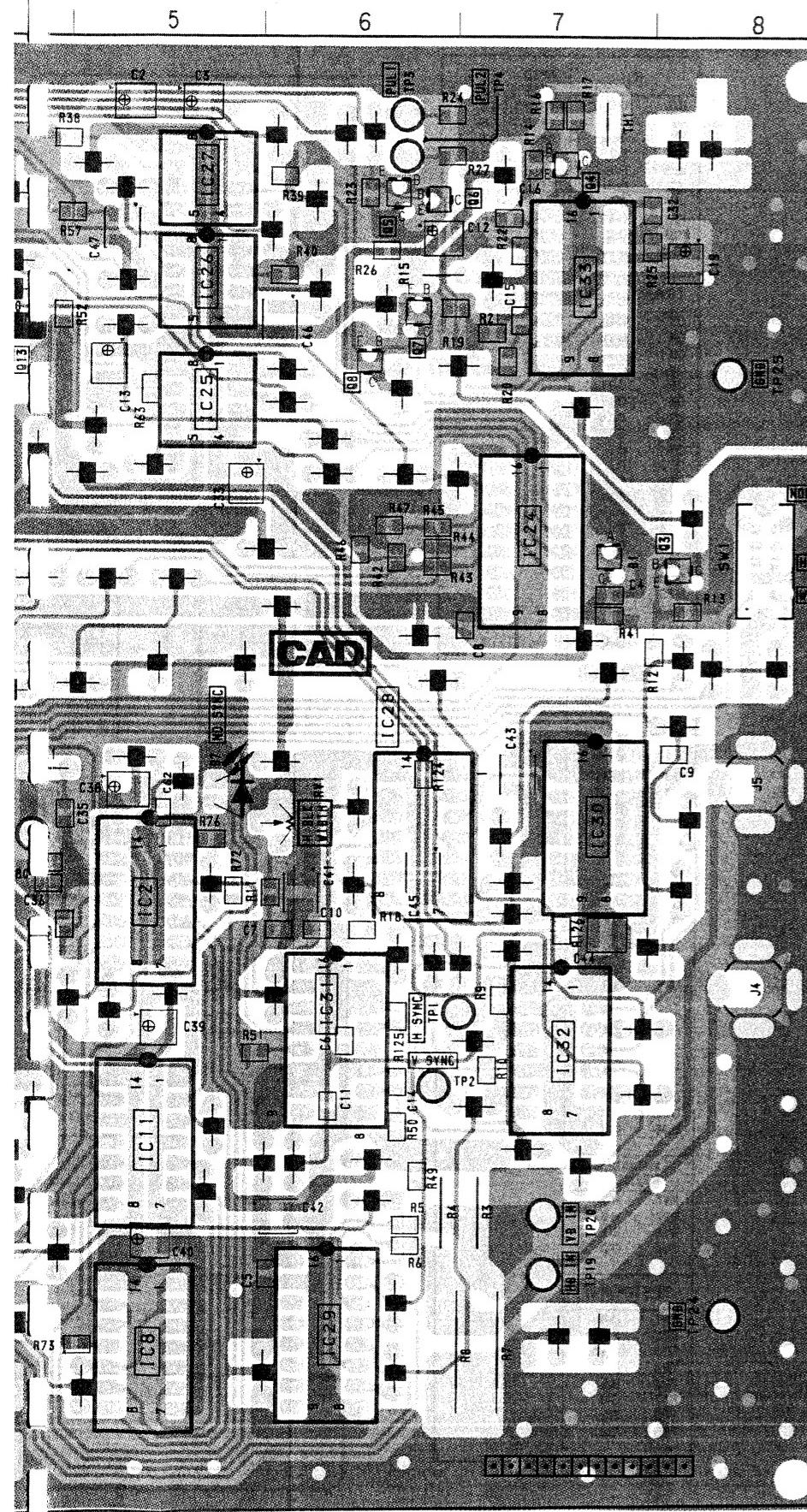
  

TESTPOINT			
TP1	F-7		
TP2	F-6		
TP3	A-6		
TP4	A-6		
TP5	A-2		
TP6	C-2		
TP7	C-2		
TP8	C-2		
TP9	C-2		
TP10	E-4		
TP11	E-2		
TP13	F-2		
TP14	G-3		
TP15	H-2		
TP16	E-3		

—B BOARD— (DDM-2801C ; Serial No. 2,000,044 and higher) (DDM-2801C2 ; Serial No. 2,000,050 and higher)  
(DDM-2802C ; Serial No. 2,000,021 and higher) (DDM-2802C2 ; Serial No. 2,000,013 and higher)



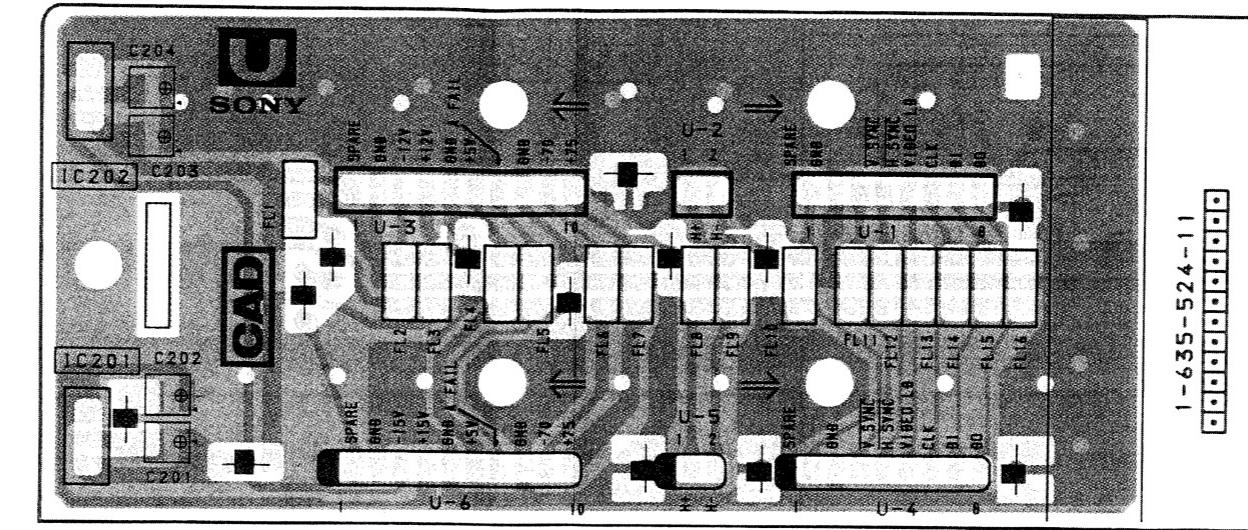
102C2; Serial No. 2,000,050 and higher)  
102C2; Serial No. 2,000,013 and higher)



: Pattern from the side which enables s  
: Pattern of the rear side.

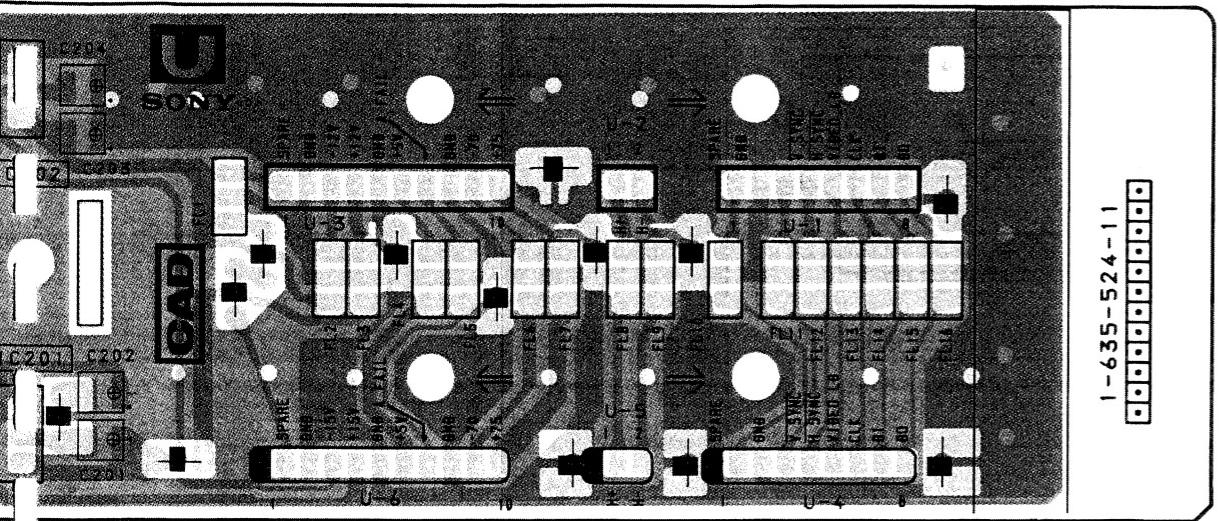
-153

**—U BOARD—** (DDM-2801C; Serial No. 2,000,044 and higher) (DDM-2801C2; Serial No. 2,000,050 and higher)  
(DDM-2802C; Serial No. 2,000,021 and higher) (DDM-2802C2; Serial No. 2,000,013 and higher)



- : Pattern from the side which enables seeing
- : Pattern of the rear side.

BOARD— (DDM-2801C ; Serial No. 2,000,044 and higher) (DDM-2801C2 ; Serial No. 2,000,050 and higher)  
(DDM-2802C ; Serial No. 2,000,021 and higher) (DDM-2802C2 ; Serial No. 2,000,013 and higher)

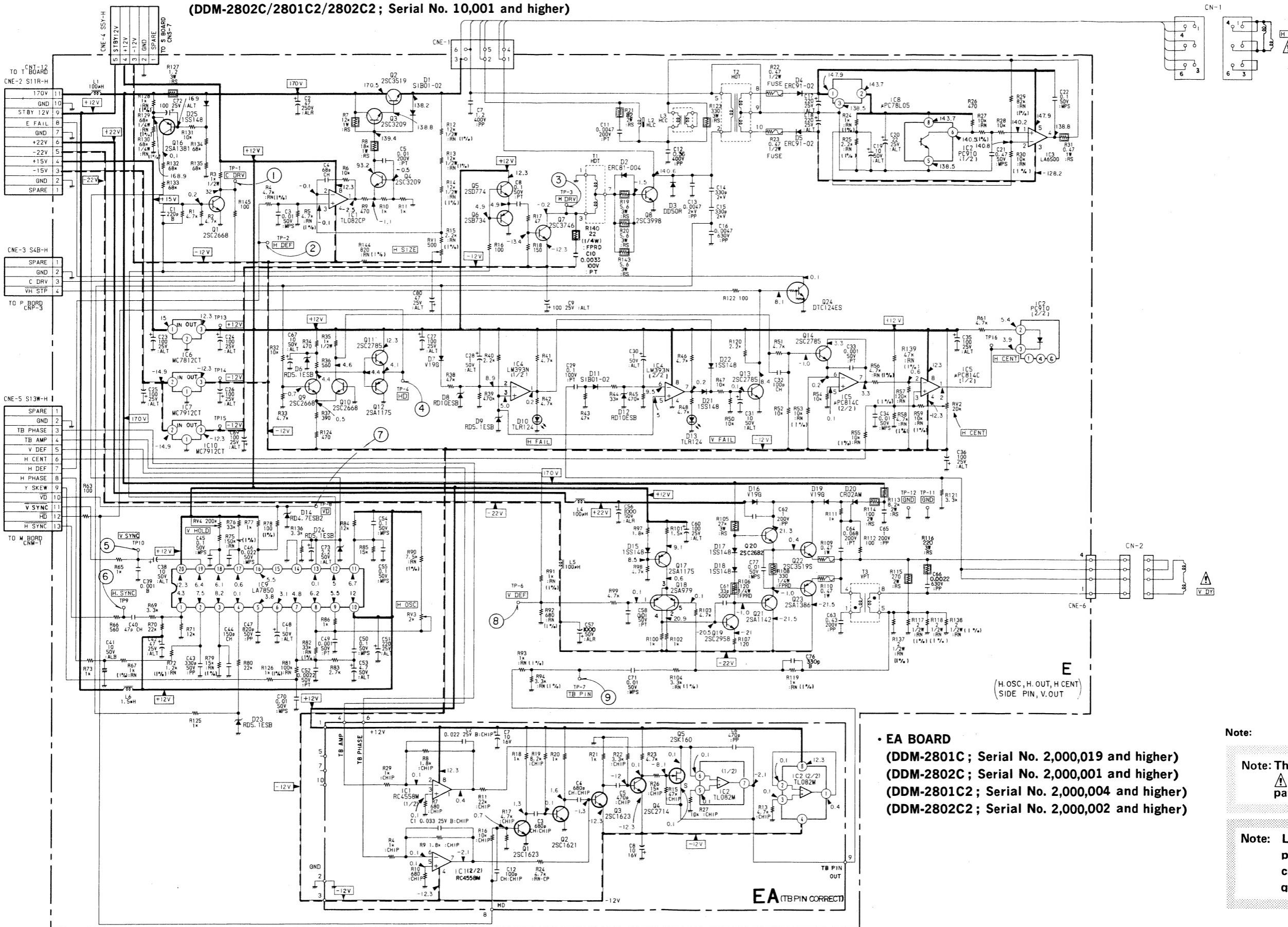


- : Pattern from the side which enables seeing
- : Pattern of the rear side.

ern from the side which enables seeing  
er of the rear side.

1 2 3 4 5 6 7 8 9 10 11 12 13 14

**E BOARD (DDM-2801C; Serial No. 10,021 and higher)  
(DDM-2802C/2801C2/2802C2; Serial No. 10,001 and higher)**



**EA BOARD**  
**(DDM-2801C; Serial No. 2,000,019 and higher)**  
**(DDM-2802C; Serial No. 2,000,001 and higher)**  
**(DDM-2801C2; Serial No. 2,000,004 and higher)**  
**(DDM-2802C2; Serial No. 2,000,002 and higher)**

Note:

Note: The components identified by shading are critical for safety. Replace part number specified.

Note: Les composants identifiés par une marque sont d'une critique pour la sécurité. Ne les que par des pèces de numéro

E

(H. OSC, H. OUT, H CENT, SIDE PIN, V OUT)

## —E BOARD—

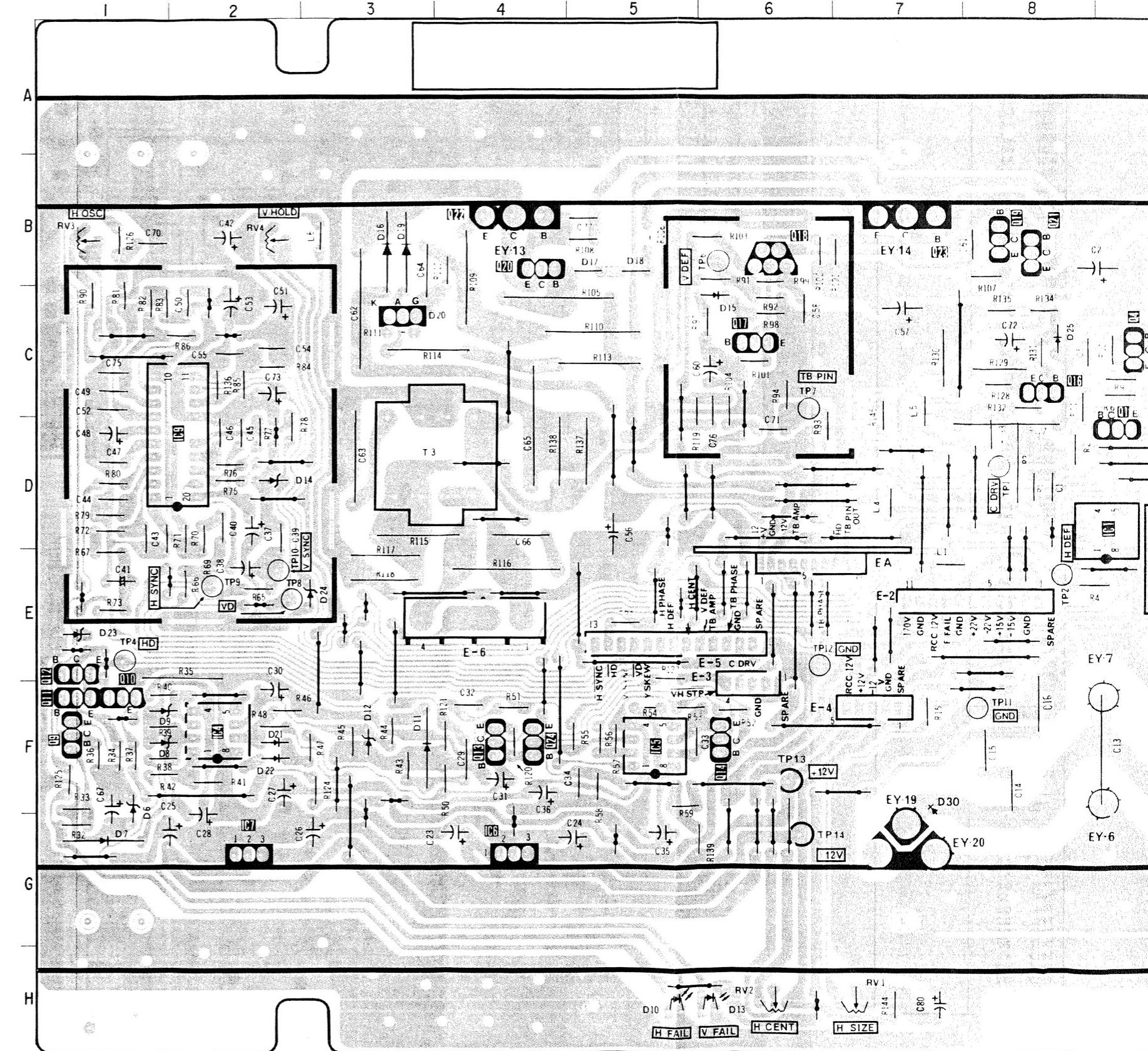
IC	TP10	E-2
IC1 D-9	TP11 F-8	
IC2 B-11	TP12 E-6	
IC3 B-12	TP13 F-6	
IC4 F-2	TP14 G-6	
IC5 F-5	TP15 C-10	
IC6 G-4	TP16 C-11	
IC7 G-2		
IC8 C-12		
IC9 D-2		
IC10 C-10		
<b>TRANSISTOR</b>		
Q1 D-9		
Q2 B-10		
Q3 C-11		
Q4 C-9		
Q5 C-11		
Q6 C-11		
Q7 D-10		
Q8 G-10		
Q9 F-1		
Q10 F-1		
Q11 F-1		
Q12 E-1		
Q13 F-4		
Q14 F-6		
Q16 C-8		
Q17 C-6		
Q18 B-6		
Q19 B-8		
Q20 B-4		
Q21 B-8		
Q22 B-4		
Q23 B-7		
Q24 F-4		
<b>DIODE</b>		
D1 B-10		
D2 E-9		
D3 G-7		
D4 C-13		
D5 D-12		
D6 F-1		
D7 G-1		
D8 F-1		
D9 F-1		
D10 H-5		
D11 F-3		
D12 F-3		
D13 H-6		
D14 D-2		
D15 C-6		
D16 B-3		
D17 B-5		
D18 B-5		
D19 B-3		
D20 C-3		
D21 F-2		
D22 F-2		
D23 E-1		
D24 E-3		
D25 C-8		
<b>VARIABLE RESISTOR</b>		
RV1 H-7		
RV2 H-6		
RV3 B-1		
RV4 B-2		
<b>TESTPOINT</b>		
TP1 D-8		
TP2 E-8		
TP3 D-11		
TP4 E-1		
TP6 B-6		
TP7 C-6		
TP8 E-2		
TP9 E-2		

Note:

Note: The components identified by shading and mark  are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par une trame et par une marque  sont d'une importance critique pour la sécurité. Ne les remplacer que par des pièces de numéro spécifié.

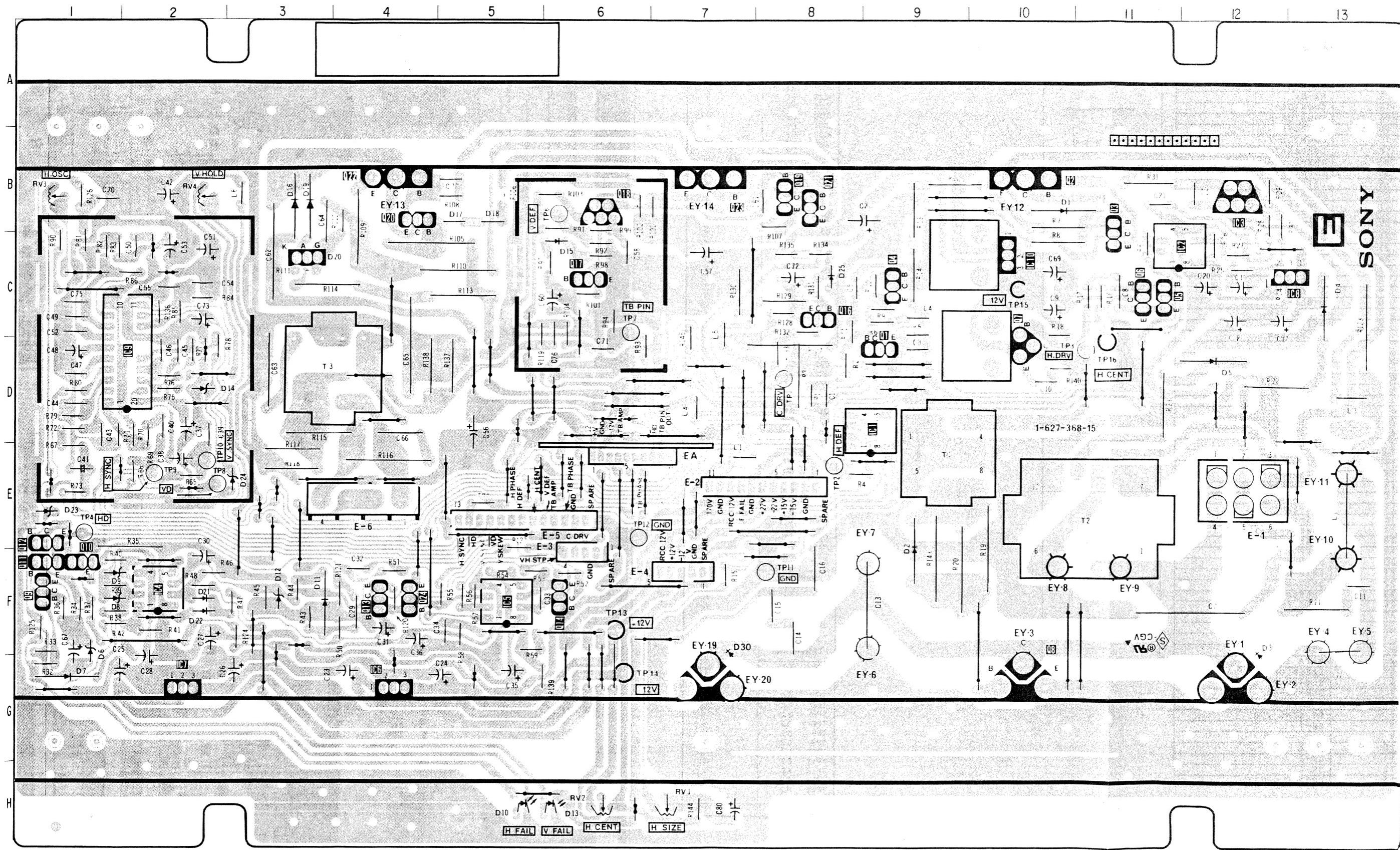
—E Board— (DDM-2801C; Serial No. 2,000,019 and higher) (DDM-2801C2; Serial No. 2,000,024 and higher)  
(DDM-2802C; Serial No. 2,000,011 and higher) (DDM-2802C2; Serial No. 2,000,006 and higher)



## I. JT, H CENT, SIDE PIN, V OUT)

E

**—E Board—** (DDM-2801C; Serial No. 2,000,019 and higher) (DDM-2801C2; Serial No. 2,000,024 and higher)  
(DDM-2802C; Serial No. 2,000,011 and higher) (DDM-2802C2; Serial No. 2,000,006 and higher)



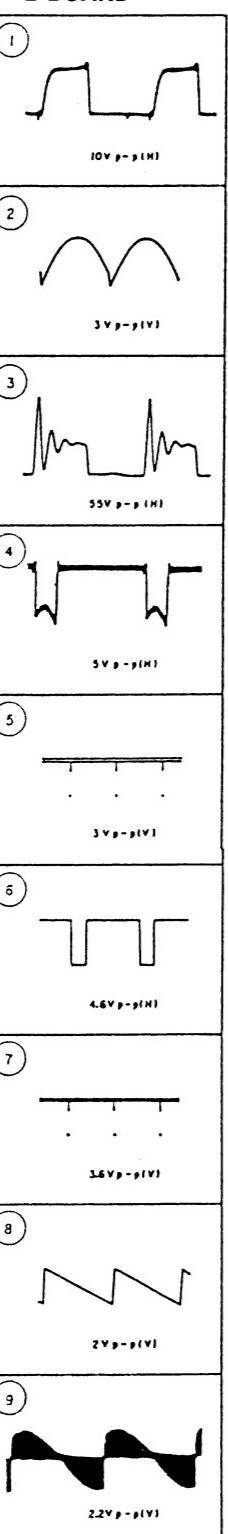
**-E BOARD-**

IC1	H PIN MODU
2	H.CENT PWM 1
3	H.CENT OUT
4	FAIL COMP
5	H.CENT PWM 2
6	12V REG
7	-12V REG
8	5V REG
9	H.V OSC
10	-12V REG
Q1	C DRV PULSE
2	H PIN OUT
3	H PIN DRIVE 1
4	H PIN DRIVE 2
5	BUFF 1
6	BUFF 2
7	H DRIVE
8	H OUT
9	HD PULSE 1
10	HD PULSE 2
11	BUFF 3
12	BUFF 4
13	V.H STOP
14	H.CENT PWM
16	HOT PROT
17	BIAS
18	V DEF PREAMP
19	V DEF DRIVE 1
20	V DEF DRIVE 2
21	V DEF DRIVE 3
22	V OUT 1
23	V OUT 2
24	E FAIL
D1	PROT
2	SPEED UP
3	DAMPER
4	H CENTER RECT 1
5	H CENTER RECT 2
6	CLAMP 1
7	H FAIL RECT
8	CLAMP 2
9	V.H FAIL REF
10	H FAIL INDI.
11	V FAIL RECT
12	CLAMP 3
13	V FAIL INDI.
14	CLAMP 4
15	BIAS 1
16	VCC SUPPLY
17	BIAS 2
18	BIAS 3
19	PROT
20	VCC SW
21	SW 1
22	SW 2
23	CLAMP 5
24	CLAMP 6
25	BIAS 4

**-EA BOARD-**

IC1	T & B PIN AMP
2	T & B PIN MODU
Q1	T.B PIN PHASE 1
2	T.B PIN PHASE 2
3	T.B PIN PHASE 3
4	T.B PIN PHASE 4
5	H SAW GEN

**-E BOARD-**



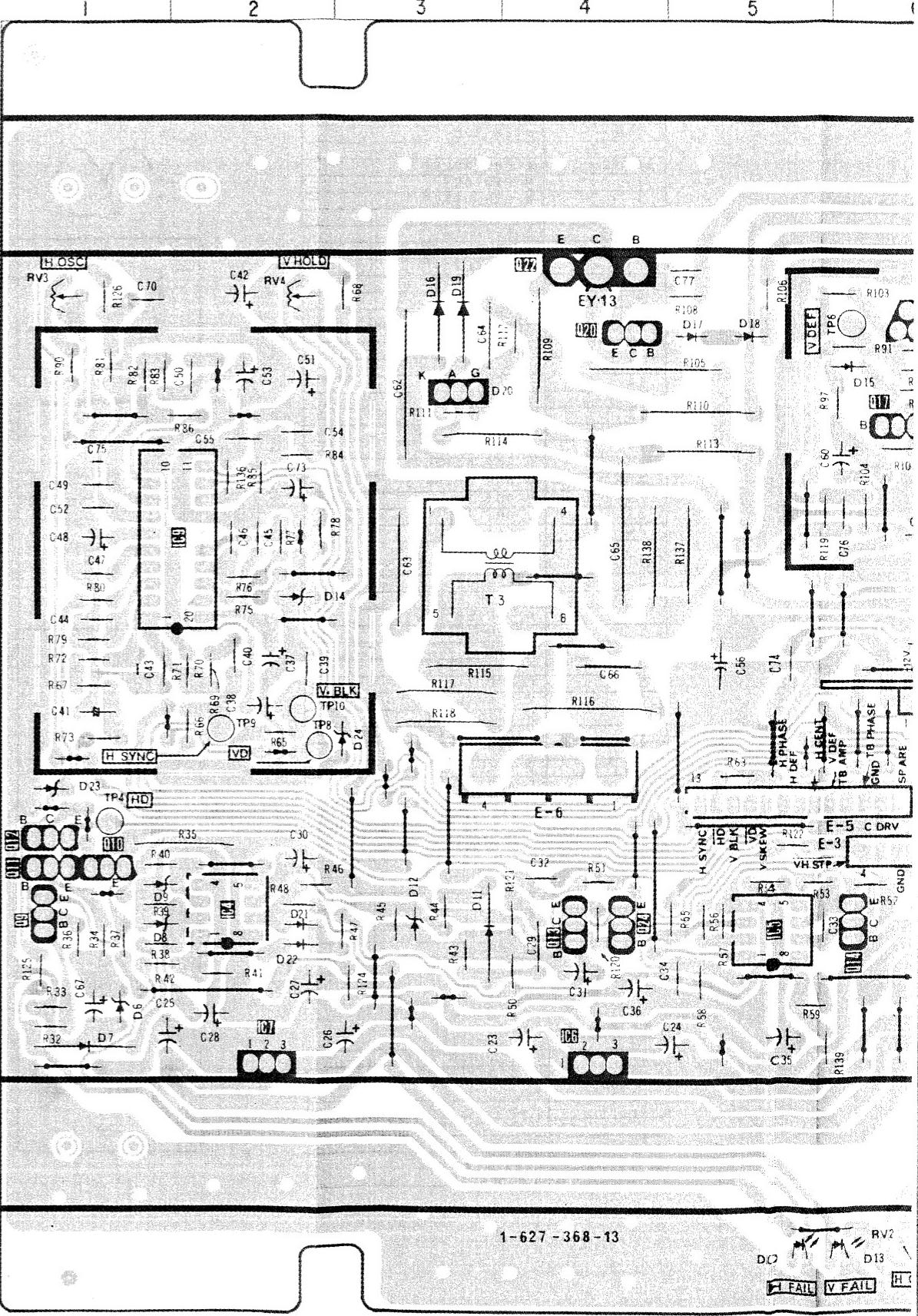
**E**

(H.OSC, H.OUT, H.CENT, SIDE PIN V.OUT)

**-E BOARD-**

IC	TP10	E-2
IC1	D-9	
IC2	B-11	
IC3	B-12	
IC4	F-2	
IC5	F-5	
IC6	G-4	
IC7	G-2	
IC8	C-12	
IC9	D-2	
IC10	C-10	
TRANSISTOR	TP11	F-8
Q1	D-9	
Q2	B-10	
Q3	C-11	
Q4	C-9	
Q5	C-11	
Q6	C-11	
Q7	D-10	
Q8	G-10	
Q9	F-1	
Q10	F-1	
Q11	F-1	
Q12	E-1	
Q13	F-4	
Q14	F-6	
Q15	C-8	
Q16	C-6	
Q17	C-6	
Q18	B-6	
Q19	B-8	
Q20	B-4	
Q21	B-8	
Q22	B-4	
Q23	B-7	
Q24	F-4	
DIODE	TP12	E-6
D1	B-10	
D2	E-9	
D3	G-7	
D4	C-13	
D5	D-12	
D6	F-1	
D7	G-1	
D8	F-1	
D9	F-1	
D10	H-5	
D11	F-3	
D12	F-3	
D13	H-6	
D14	D-2	
D15	C-6	
D16	B-3	
D17	B-5	
D18	B-5	
D19	B-3	
D20	C-3	
D21	F-2	
D22	F-2	
D23	E-1	
D24	E-3	
D25	C-8	
VARIABLE RESISTOR		
RV1	H-7	
RV2	H-6	
RV3	B-1	
RV4	B-2	
TESTPOINT		
TP1	D-8	
TP2	E-8	
TP3	D-11	
TP4	E-1	
TP6	B-6	
TP7	C-6	
TP8	E-2	
TP9	E-2	

**-E BOARD-** (DDM-2801C; Serial No. 10,021-2,000,018) (DDM-2801C2; Serial No. 10,001-2,000,018)  
(DDM-2802C; Serial No. 10,001-2,000,010) (DDM-2802C2; Serial No. 10,001-2,000,010)

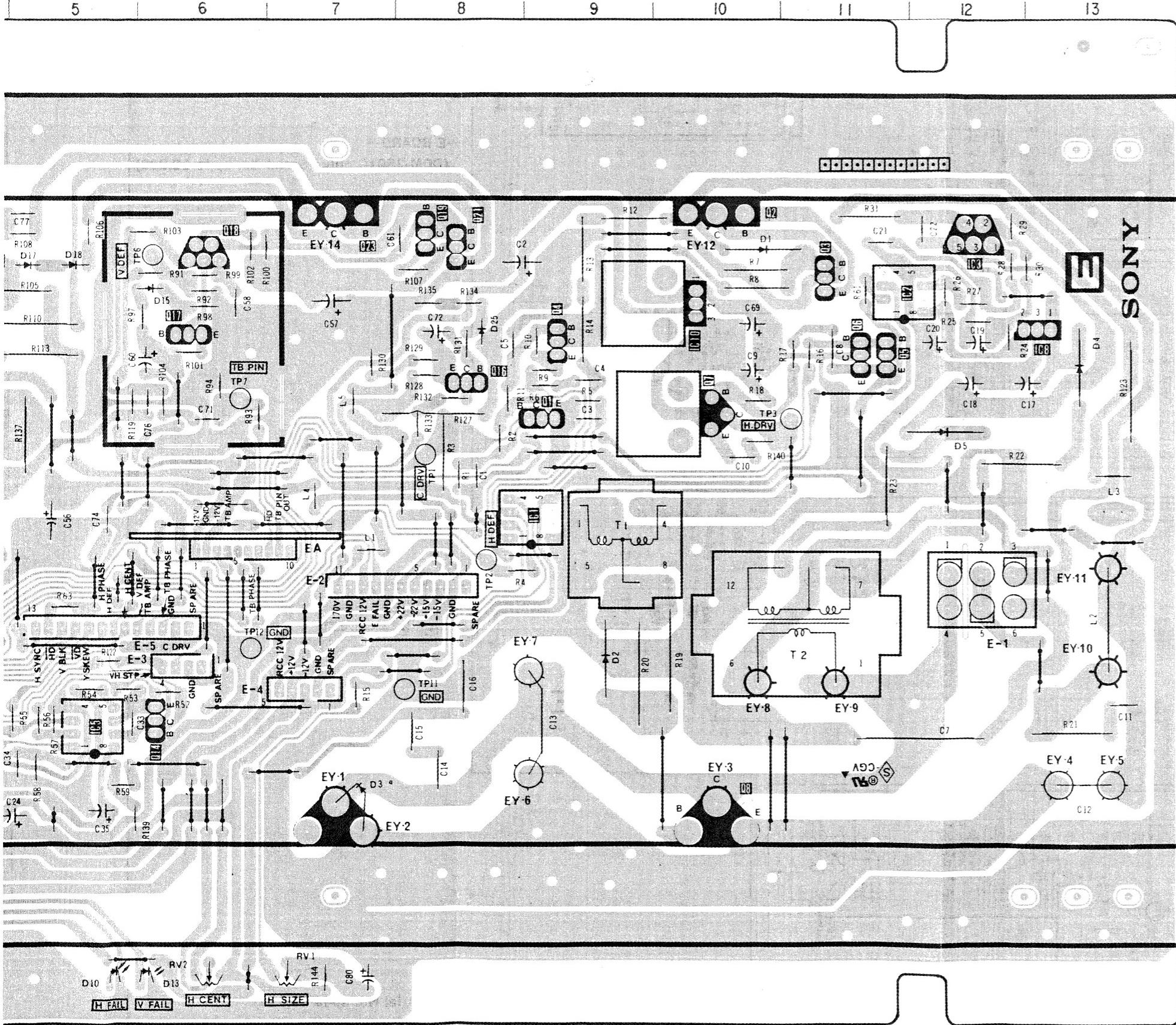


1-627-368-13

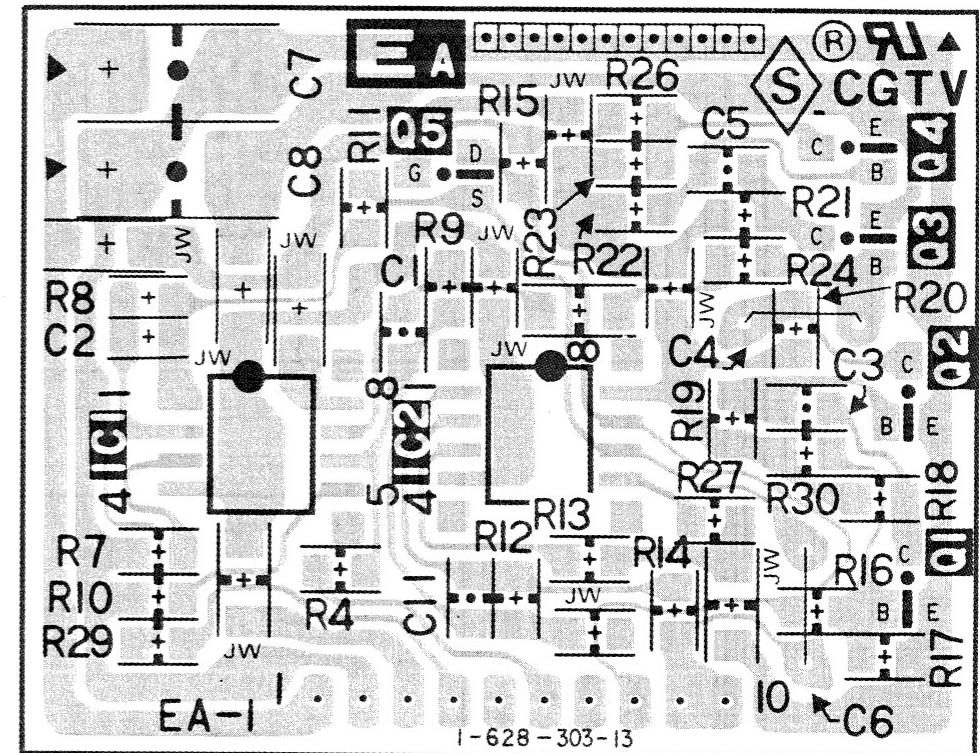
E

EA

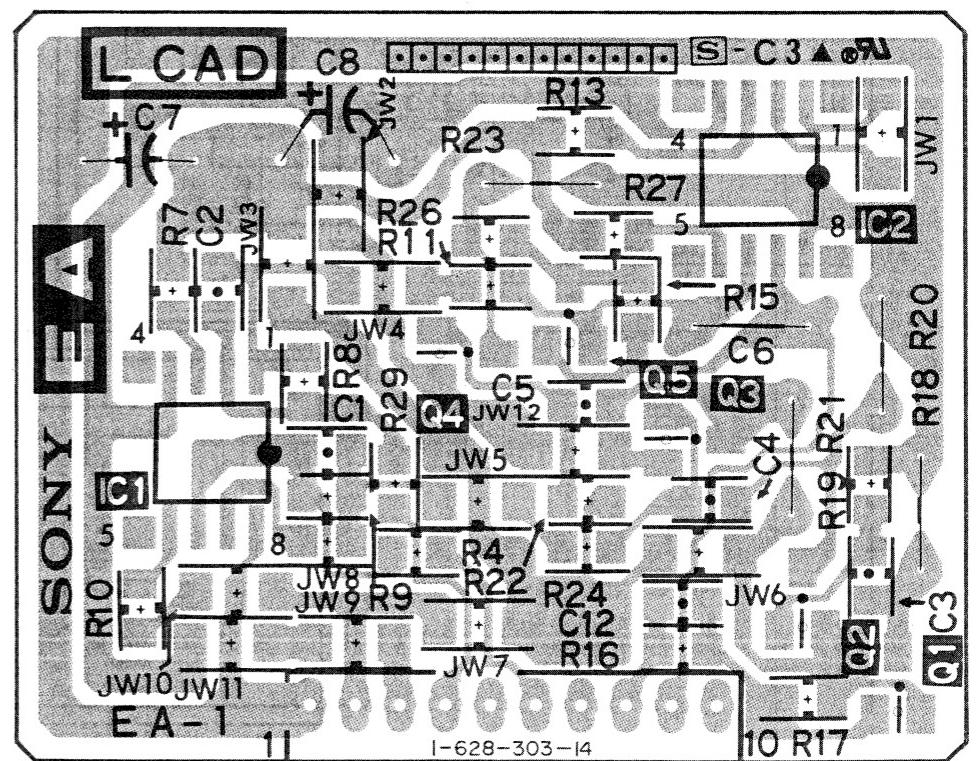
C2; Serial No. 10,001–2,000,023)  
C2; Serial No. 10,001–2,000,005)

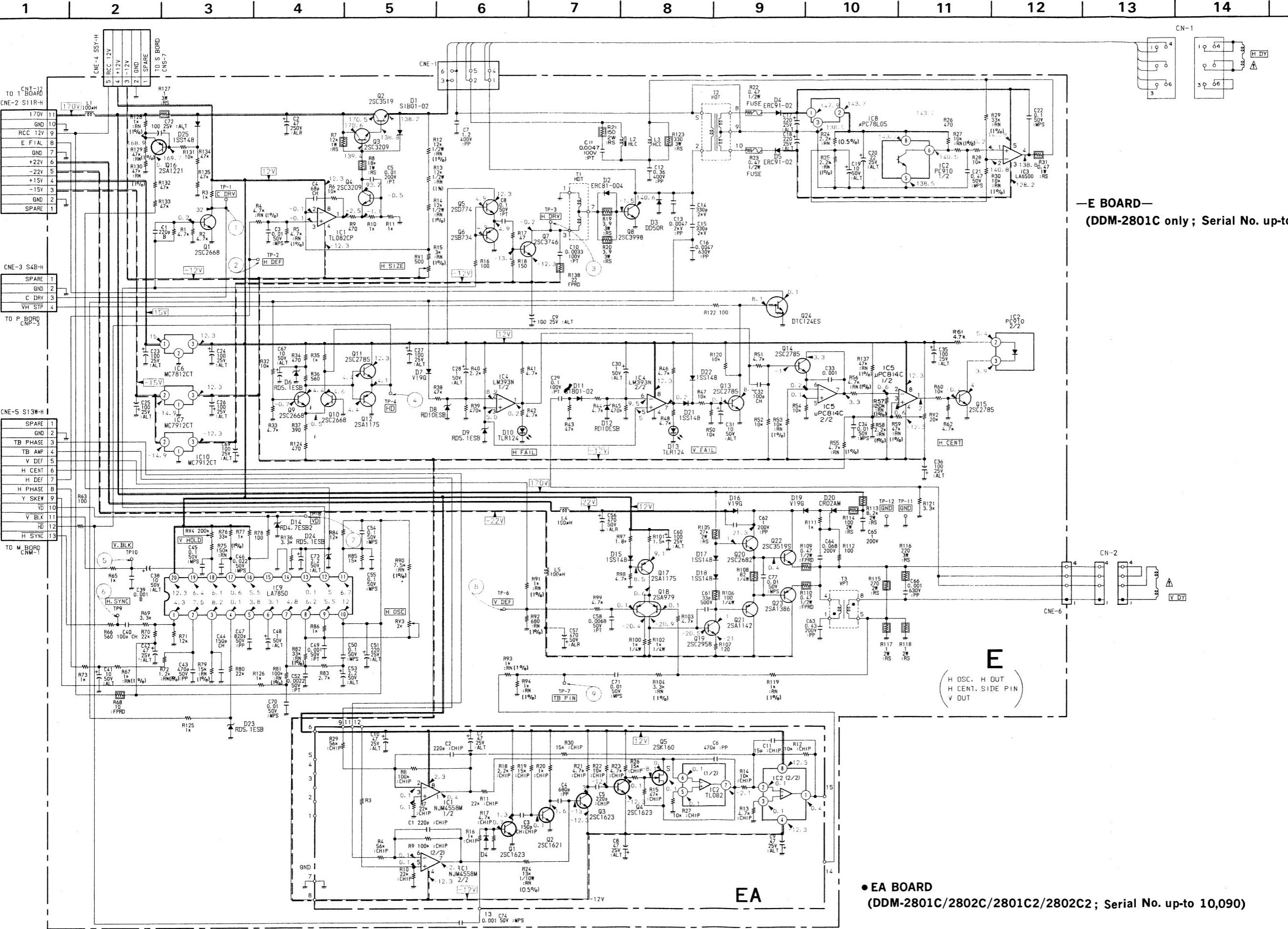


—EA BOARD— (DDM-2801C, Serial No. 10,091–2,000,018)  
(DDM-2802C, Serial No. 10,001–10,003)  
(DDM-2801C2, Serial No. up-to 2,000,003)  
(DDM-2802C2, Serial No. up-to 2,000,001)



—EA BOARD— (DDM-2801C; Serial No. 2,000,019 and higher)  
(DDM-2802C; Serial No. 2,000,001 and higher)  
(DDM-2801C2; Serial No. 2,000,004 and higher)  
(DDM-2802C2; Serial No. 2,000,002 and higher)





**—E BOARD—**  
**(DDM-2801C only ; Serial No. up-to 10,020)**

IC1
2
3
4
5
6
7
8
9
10
Q1
2
3
4
5
6
7
8
9
10
11
12
13
14
16
17
18
19
20
21
22
23
24
D1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

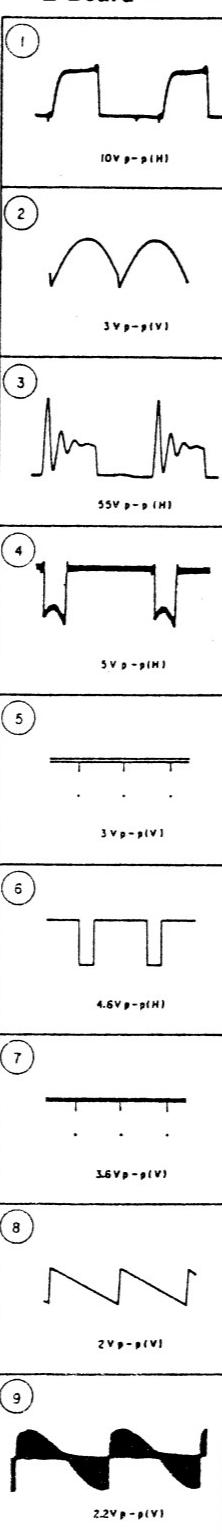
- EA BOARD  
(DDM-2801C/2802C/2801C2/2802C2; Serial No. up-to 10,090)

**—E Board—**

IC1	H PIN MODU
2	H.CENT PWM 1
3	H.CENT OUT
4	FAIL COMP
5	H.CENT PWM 2
6	12V REG
7	-12V REG
8	5V REG
9	H.V OSC
10	-12V REG
Q1	C DRV PULSE
2	H PIN OUT
3	H PIN DRIVE 1
4	H PIN DRIVE 2
5	BUFF 1
6	BUFF 2
7	H DRIVE
8	H OUT
9	HD PULSE 1
10	HD PULSE 2
11	BUFF 3
12	BUFF 4
13	V.H STOP
14	H.CENT PWM
16	HOT PROT
17	BIAS
18	V DEF PREAMP
19	V DEF DRIVE 1
20	V DEF DRIVE 2
21	V DEF DRIVE 3
22	V OUT 1
23	V OUT 2
24	E FAIL
D1	PROT
2	SPEED UP
3	DAMPER
4	H CENTER RECT 1
5	H CENTER RECT 2
6	CLAMP 1
7	H FAIL RECT
8	CLAMP 2
9	V.H FAIL REF
10	H FAIL INDI.
11	V FAIL RECT
12	CLAMP 3
13	V FAIL INDI.
14	CLAMP 4
15	BIAS 1
16	VCC SUPPLY
17	BIAS 2
18	BIAS 3
19	PROT
20	VCC SW
21	SW 1
22	SW 2
23	CLAMP 5
24	CLAMP 6
25	BIAS 4

**—EA Board—**

IC1	T & B PIN AMP
2	T & B PIN MODU
Q1	T.B PIN PHASE 1
2	T.B PIN PHASE 2
3	T.B PIN PHASE 3
4	T.B PIN PHASE 4
5	H SAW GEN

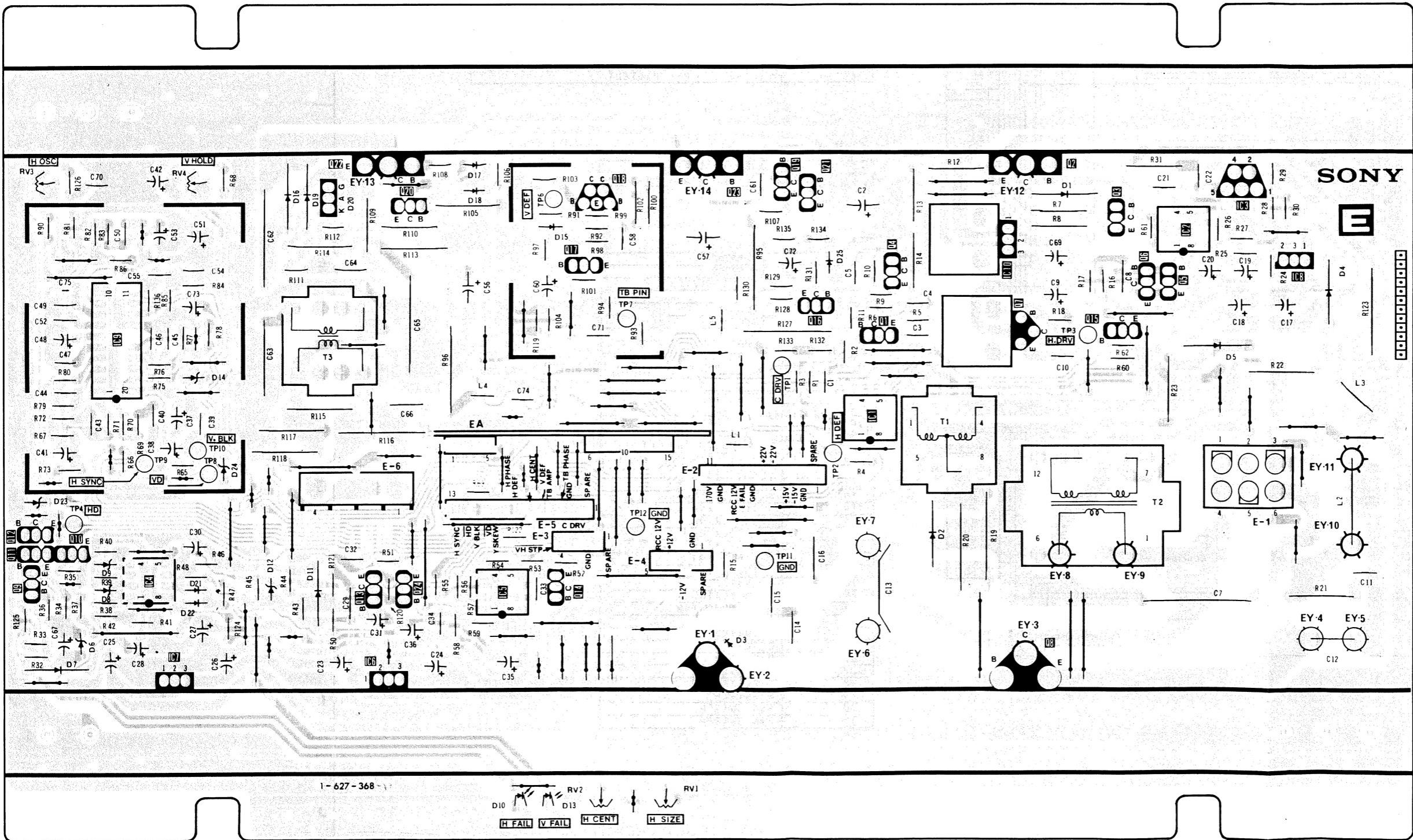
**—E Board—**

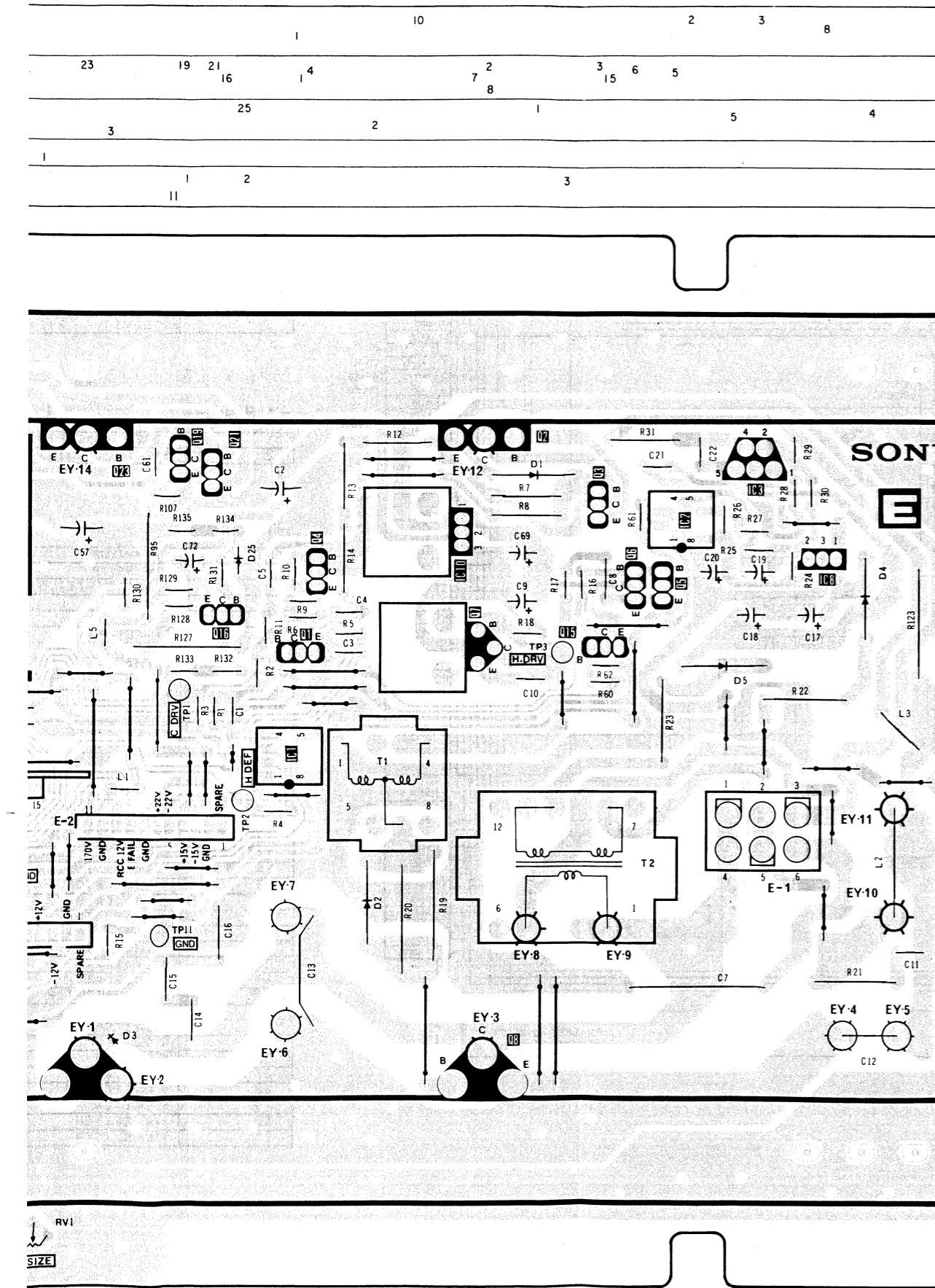
**E**

(H.OSC, H.OUT, H.CENT, SIDE PIN V.OUT)

—E BOARD— (DDM-2801C only, Serial No. up-to 10,020)

IC	9	4	7	6	5		10	2	3	8
O	11	12	10	9						
D	23	6	9	14	21	24	12	16	19	20
RV	3			17	18	14	17	15		
TP	4	9	10	8	22	13	20	24	16	18
					14	17	18	23	19	21
					10	13		25	16	14
						3		2		
							6	7	2	
							12	1		
								1	2	
									3	
										1
										2
										3
										5
										4

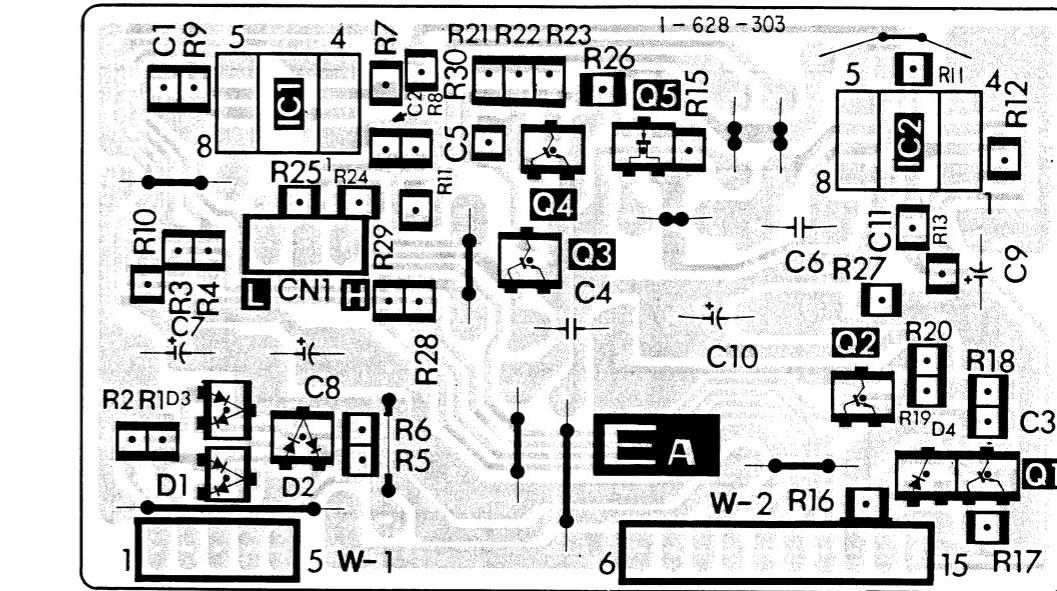




1

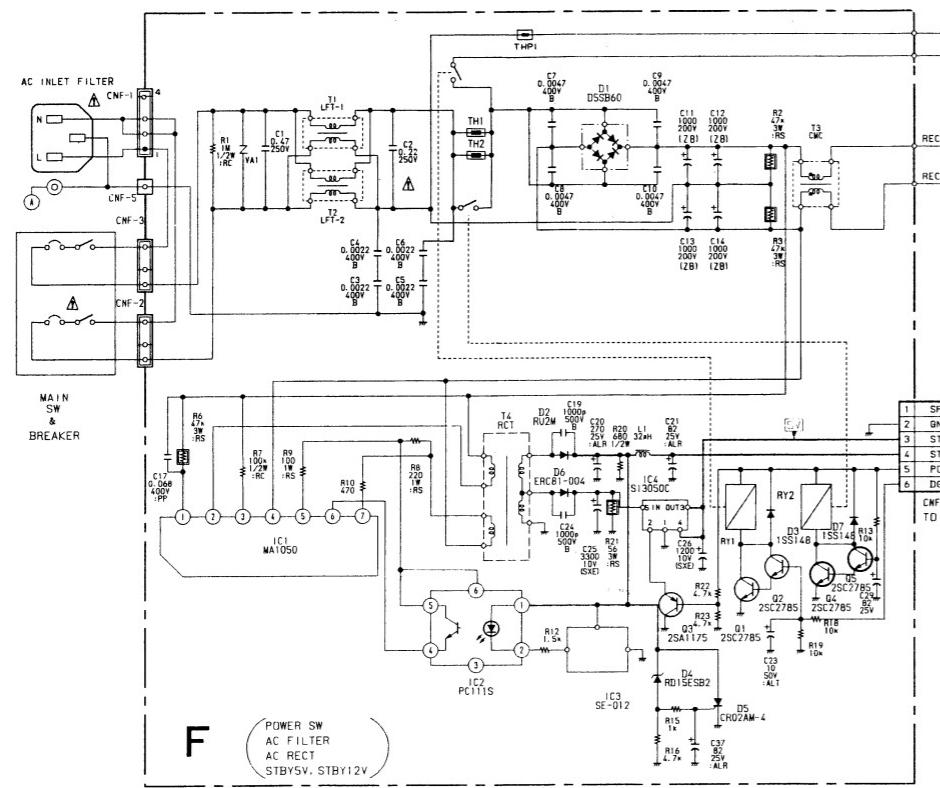
E

—EA BOARD— (DDM-2801C/2802C/2801C2/2802C2; Serial No. up-to 10,090)



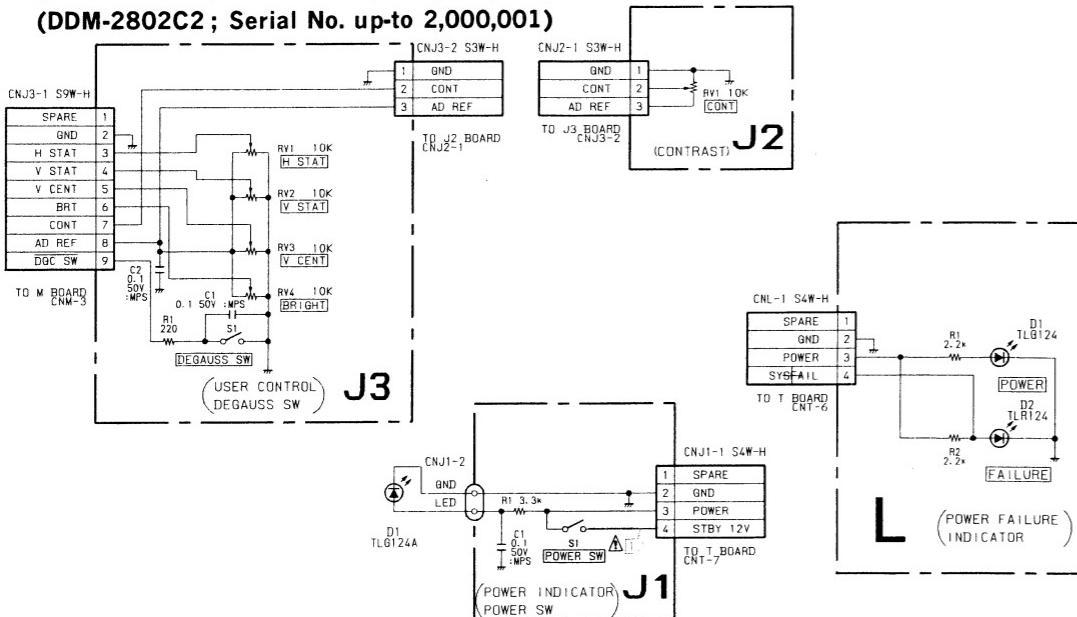
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

- F BOARD 100V—120V  
(DDM-2801C; Serial No. 10,001 and higher)  
(DDM-2802C; Serial No. 10,001 and higher)

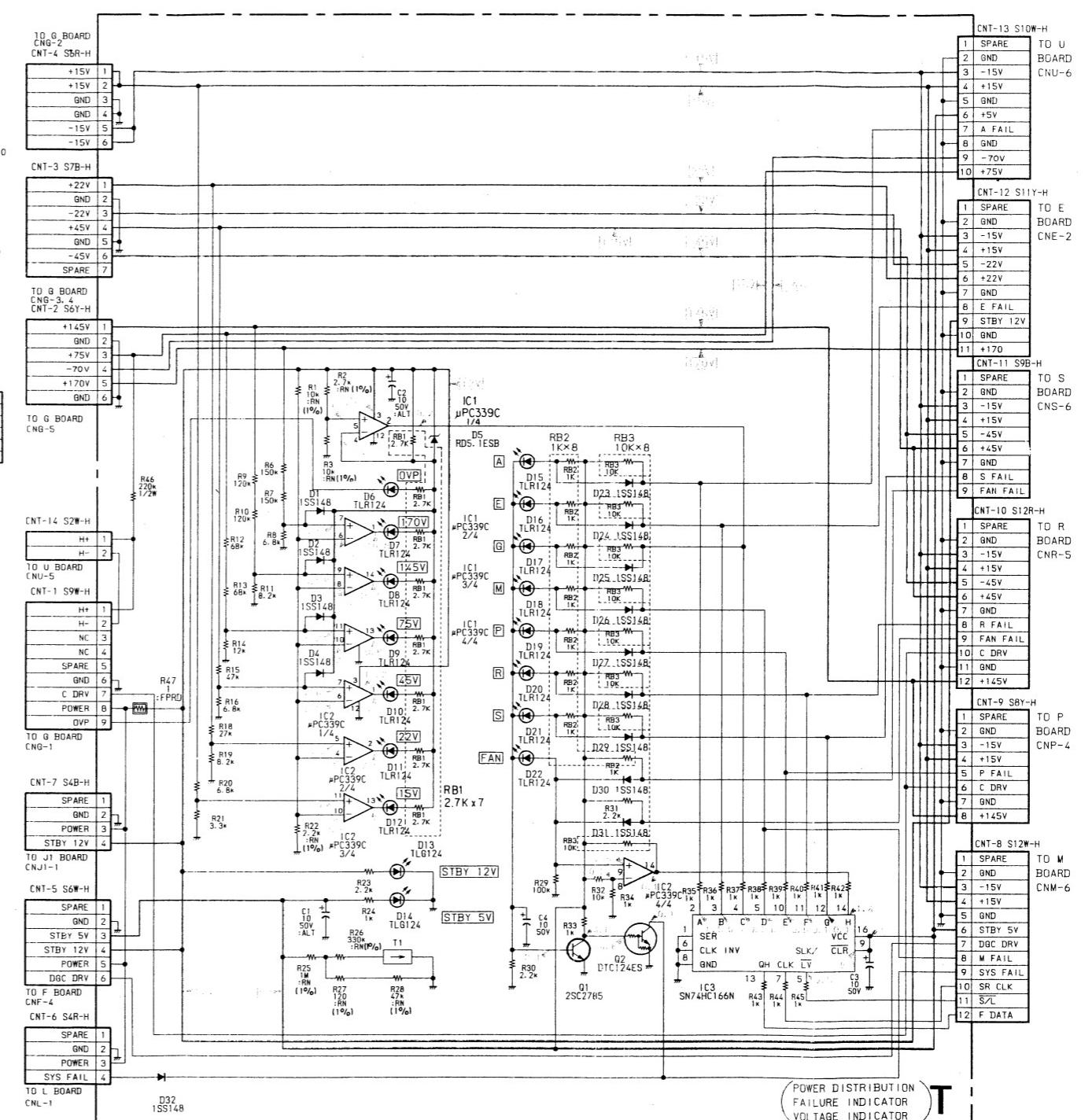


- J1, J2, L BOARDS  
(DDM-2801C/DDM-2802C/DDM-2801C2/DDM-2802C2; Serial No. 10,001 and higher)

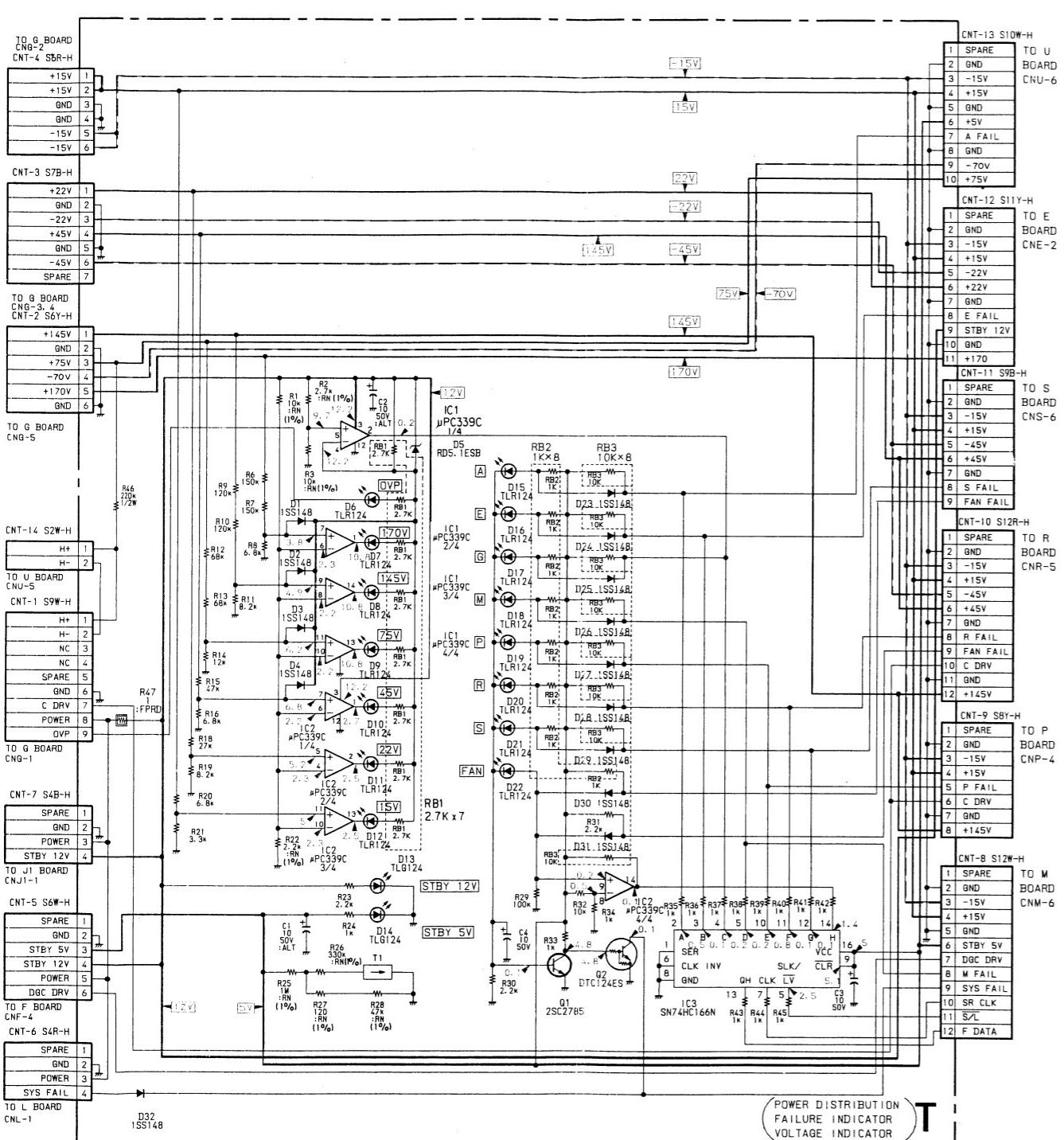
- J3 BOARD  
(DDM-2801C; Serial No. up-to 2,000,018)  
(DDM-2802C; Serial No. 10,001—10,003)  
(DDM-2801C2; Serial No. up-to 2,000,003)  
(DDM-2802C2; Serial No. up-to 2,000,001)



- T BOARD (DDM-2801C; Serial No. up-to 2,000,018) (DDM-2801C2; Serial No. up-to 2,000,003)  
(DDM-2802C; Serial No. 10,001—10,003) (DDM-2802C2; Serial No. up-to 2,000,001)



8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19



—F Board—

IC1	MA1050	CONVERTER DRIVE/OUT
2	PC111S	PHOTO CUPPLER
3	SE012	12V ERROR AMP
4	SI3050C	5V REGULATOR
Q1	2SC2785	RY1 DRIVE 1
2	2SC2785	RY1 DRIVE 2
3	2SC2785	RY2 DRIVE 1
4	2SC2785	RY2 DRIVE 2
5	ZSA1175	5V ON/OFF SWITCH
D1	D5SB60	AC RECT
2	RU2M	STBY 12V RECT
3	1SS148	RY1 PROTECT
4	RD15	12V OVER VOLTAGE DET.
5	CRO2AM4	12V OVER VOLTAGE PROTECTOR
6	ERC81-004	STBY 5V RECT
7	1SS148	RY2 PROTECT

-L Board-

D1	POWER INDICATOR
2	FAILURE INDICATOR

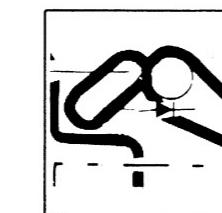
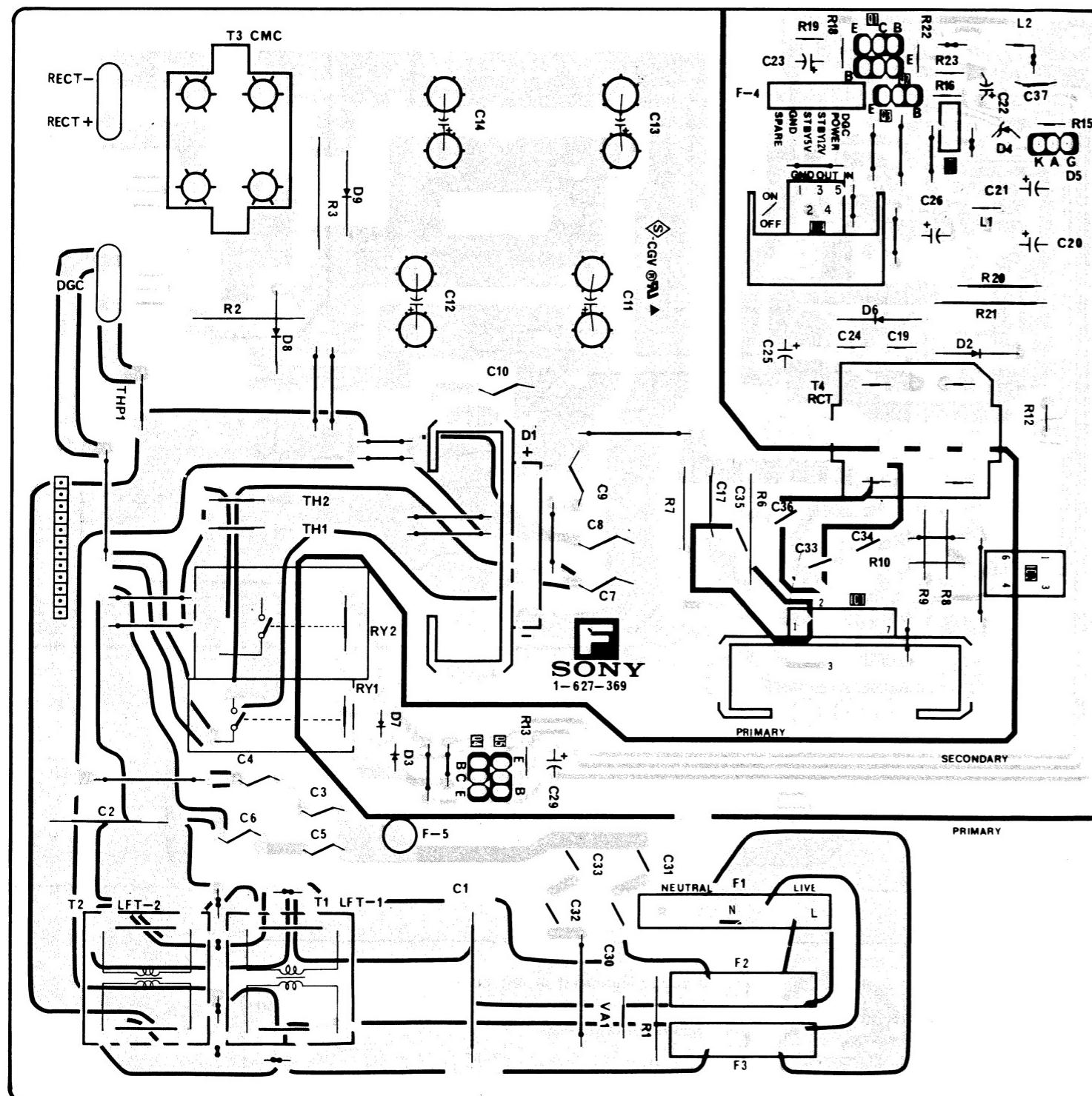
-T Board-

IC1	COMPARATOR
2	COMPARATOR
3	SHIFT REGISTER
Q1	FAIL
2	SYSTEM FAIL
D1	CLAMP
2	CLAMP
3	CLAMP
4	CLAMP
5	ZENER DIODE
6	OVP INDICATOR
7	170V INDICATOR
8	145V INDICATOR
9	75V INDICATOR
10	45V INDICATOR
11	22V INDICATOR
12	15V INDICATOR
13	STBY 12V INDICATOR
14	STBY 5V INDICATOR
15	A INDICATOR
16	E INDICATOR
17	G INDICATOR
18	M INDICATOR
19	P INDICATOR
20	R INDICATOR
21	S INDICATOR
22	FAN INDICATOR
23	A SWITCH
24	E SWITCH
25	G SWITCH
26	M SWITCH
27	P SWITCH
28	R SWITCH
29	S SWITCH
30	FAN SWITCH
31	FAN SWITCH

卷之三

**F** (POWER SW, AC FILTER, AC RECT. STBY 5V, STBY 12V)

—F BOARD— (DDM-2801C; Serial No. up-to 2,000,013) (DDM-2801C2; Serial No. up-to 2,000,003)  
(DDM-2802C; Serial No. 10,001—10,003) (DDM-2802C2; Serial No. up-to 2,000,001)



NOT

**NOTE:** The circuit indicated as left contains high voltage of over 600 Vp-p. Care must be paid to prevent an electric shock in inspection or repairing.

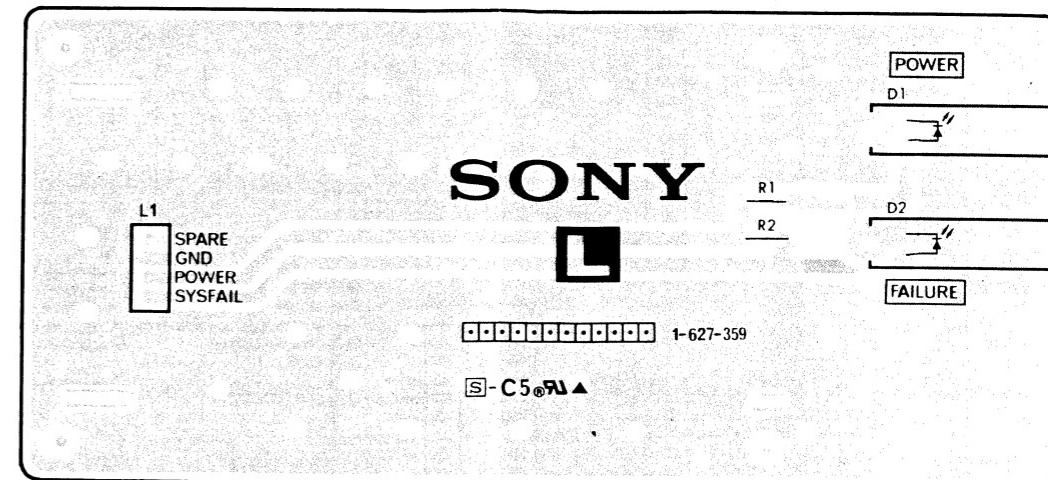
J3 (CUSTOMER CONTROL, DEGAUSS SW)

(POWER/FAILURE, INDICATOR)

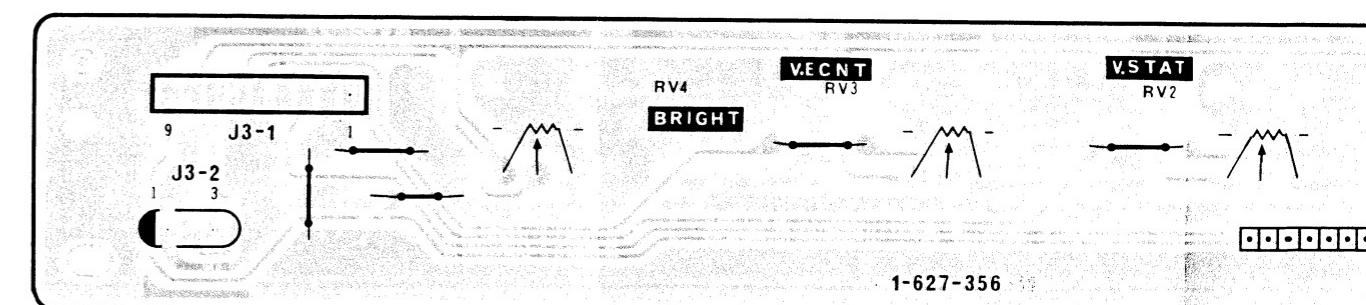
**J2** (CONTRAST)

J1

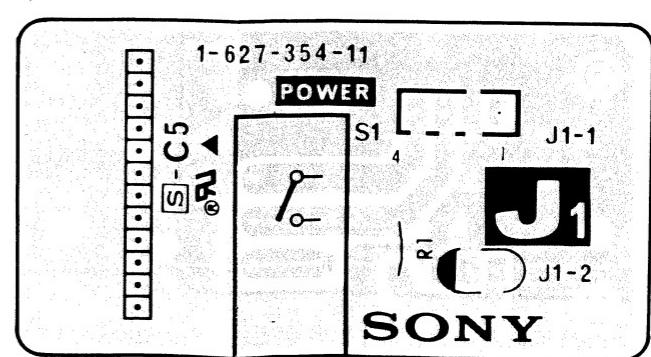
**—L BOARD—**  
(DDM-2801C only; Serial No. up-to 2,000,018) (DDM-2801C2; Serial No. up-to 2,000,023)  
(DDM-2802C; Serial No. up-to 2,000,010) (DDM-2802C2; Serial No. up-to 2,000,005)



**—J3 BOARD— (DDM-2801C only, Serial No. up-to 2,000,018)**



—J1 BOARD— (DDM-2801C only, Serial No. up-to 10,030)



J2

(CONTRAST)

J1

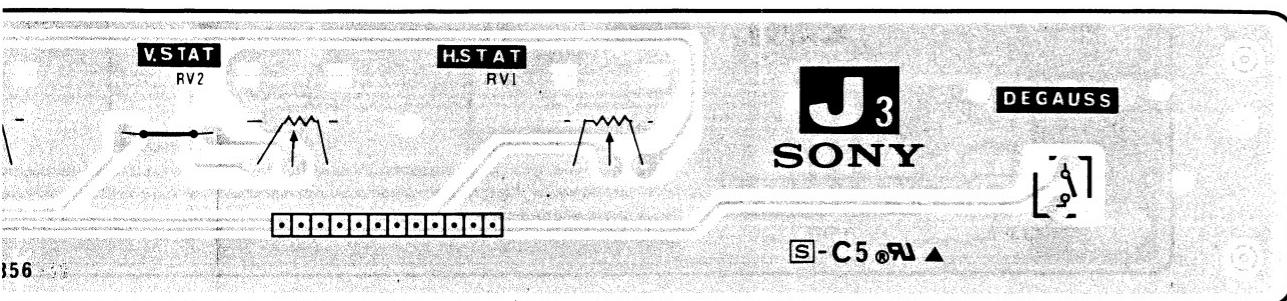
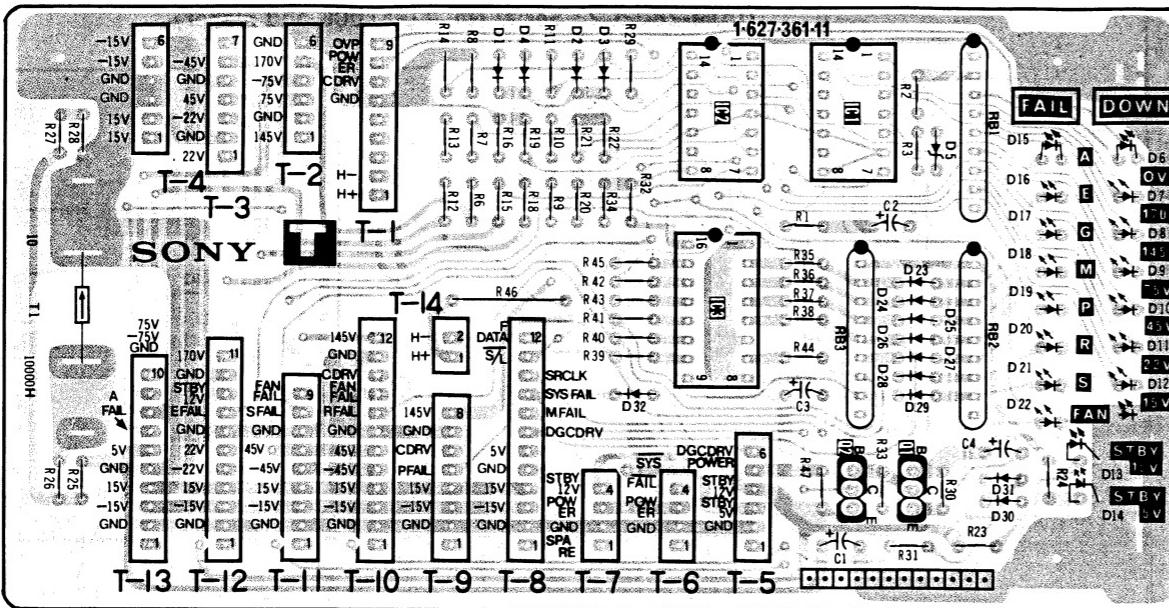
(POWER INDICATOR, POWER SW)

T

(POWER DISTRIBUTION, FAILURE INDICATOR, VOLTAGE INDICATOR)

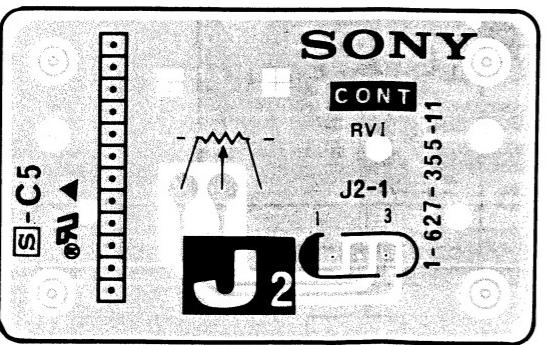
o. up-to 2,000,023)  
o. up-to 2,000,005)

—T BOARD— (DDM-2801C; Serial No. up-to 2,000,018) (DDM-2801C2; Serial No. up-to 2,000,003)  
(DDM-2802C; Serial No. 10,001—10,003) (DDM-2802C2; Serial No. up-to 2,000,001)



0,030)

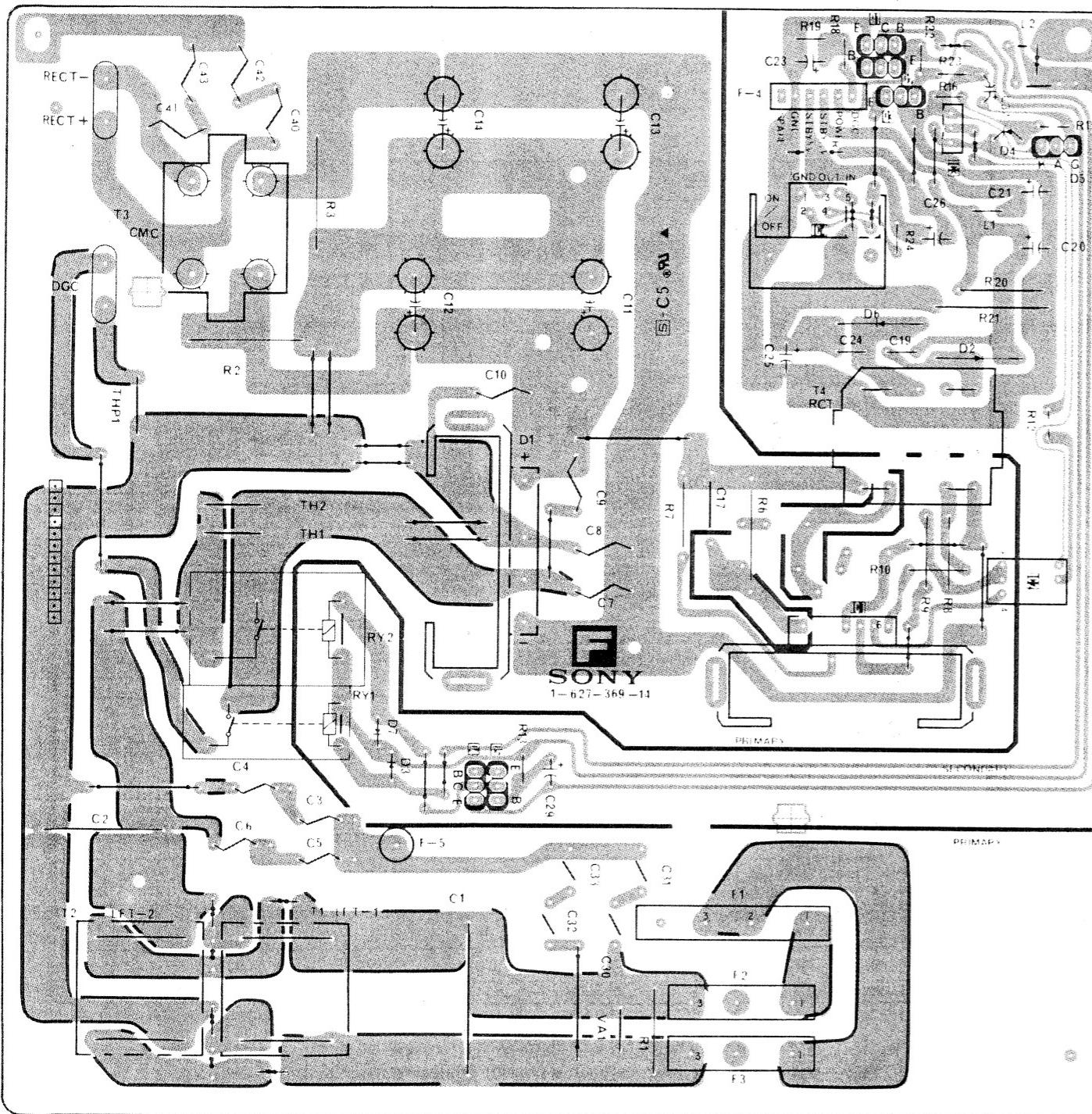
—J2 BOARD— (DDM-2801C only, Serial No. up-to 10,030)



- : Pattern from the side which enables seeing
- : Pattern of the rear side.

**F** (POWER SW, AC FILTER, AC RECT. STBY 5V, STBY 12V)

**—F BOARD—** (DDM-2801C; Serial No. 2,000,014 and higher)  
(DDM-2802C; Serial No. 2,000,001 and higher)



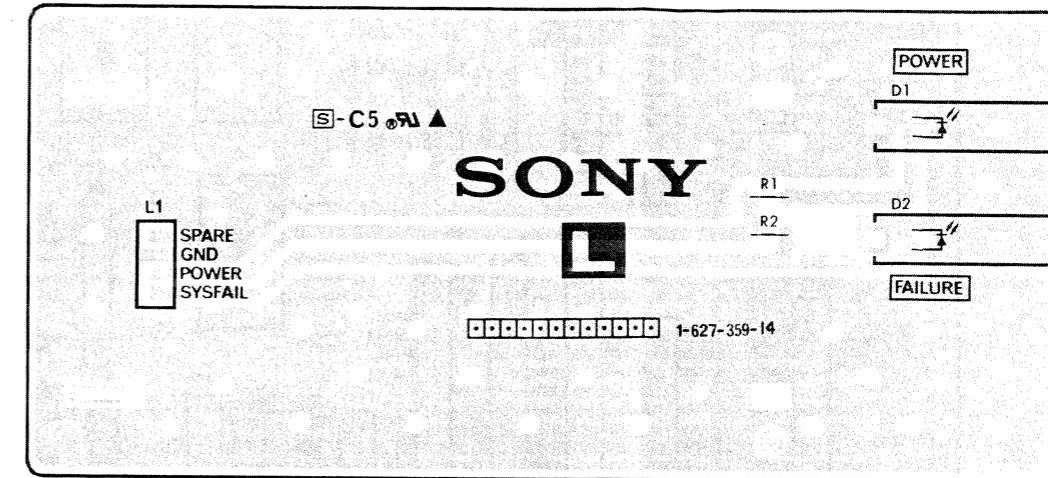
NOT

**NOTE:**  
The circuit indicated as left contains high voltage of over 600 Vp-p. Care must be paid to prevent an electric shock in inspection or repairing.

L (POWER/FAILURE. INDICATOR)

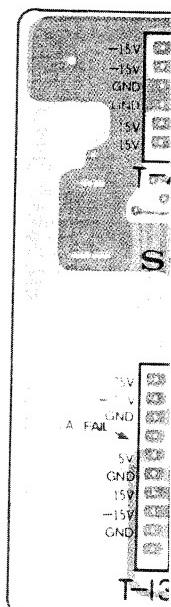
J3 (CUSTOMER CONTROL DEGAUSS SW)

**—L BOARD—** (DDM-2801C ; Serial No. 2,000,019 and higher)  
(DDM-2802C ; Serial No. 2,000,011 and higher)  
(DDM-2801C2 ; Serial No. 2,000,024 and higher)  
(DDM-2802C2 ; Serial No. 2,000,006 and higher)

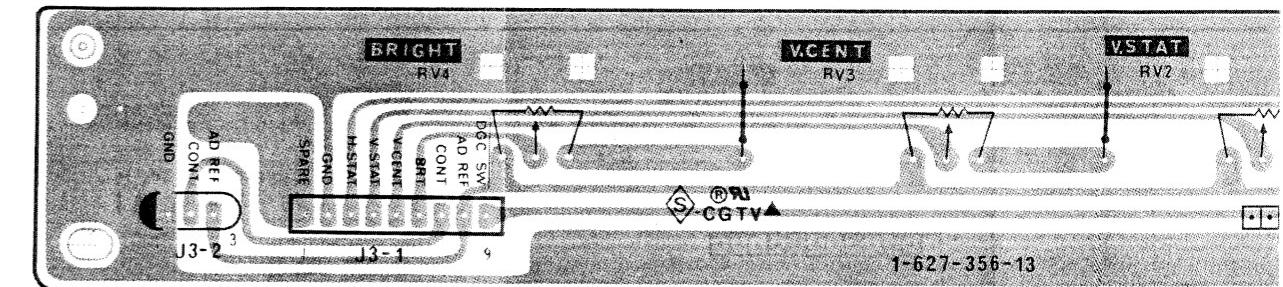


(CON)

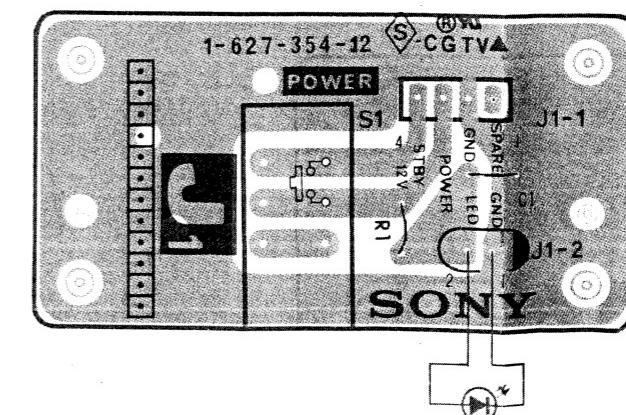
**—T BOARD— (DDM-28)**



**—J3 BOARD—** (DDM-2801C; Serial No. 2,000,019 and higher) (DDM-2801C2; Serial No. 2,000,004 and high  
(DDM-2802C; Serial No. 2,000,001 and higher) (DDM-2802C2; Serial No. 2,000,002 and high



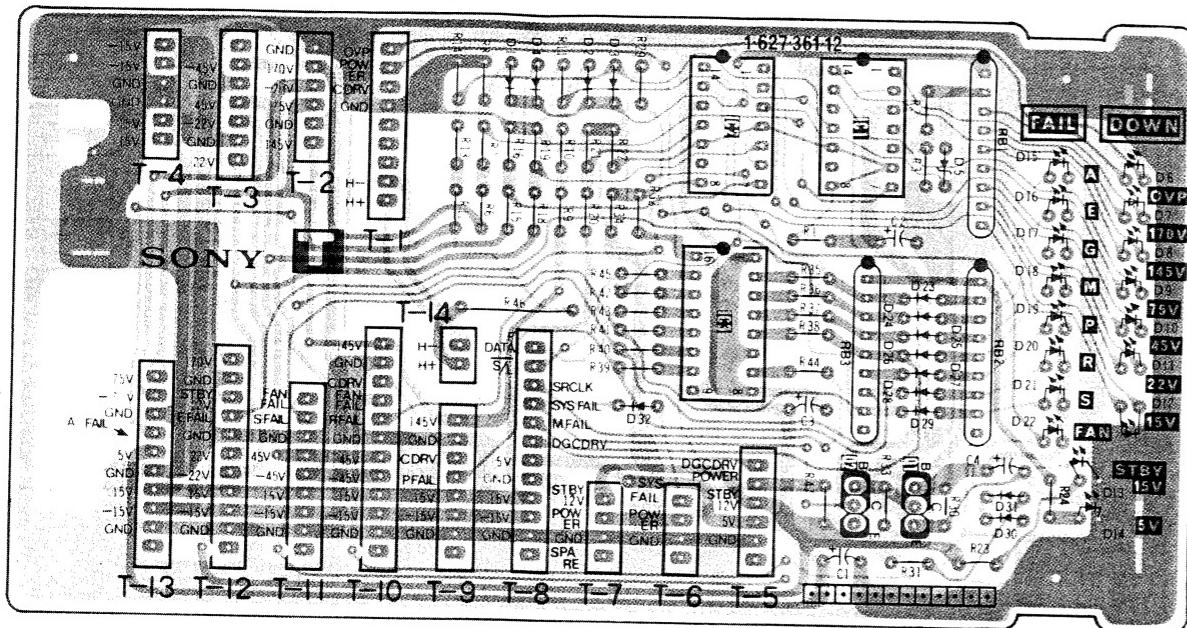
**—J1 Board—** (DDM-2801C; Serial No. 10,031 and higher)  
(DDM-2802C/2801C2/2802C2; Serial No. 10,



R, POWER SW) **J2** (CONTRAST)

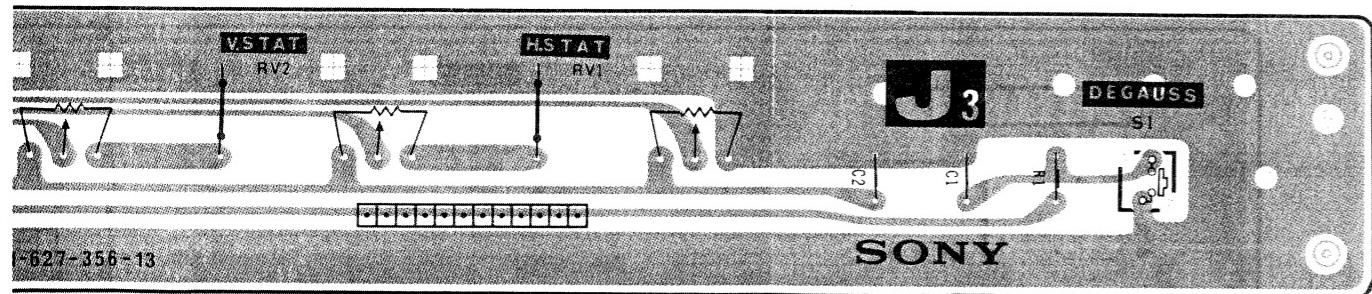
**T** (POWER DISTRIBUTION, FAILURE INDICATOR, VOLTAGE INDICATOR)

—T BOARD— (DDM-2801C; Serial No. 2,000,019 and higher) (DDM-2801C2; Serial No. 2,000,004 and higher)  
(DDM-2802C; Serial No. 2,000,001 and higher) (DDM-2802C2; Serial No. 2,000,002 and higher)



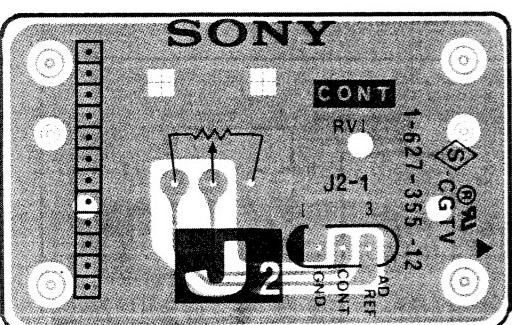
?; Serial No. 2,000,004 and higher)

?; Serial No. 2,000,002 and higher)



—J2 BOARD— (DDM-2801C; Serial No. 10,031 and higher)

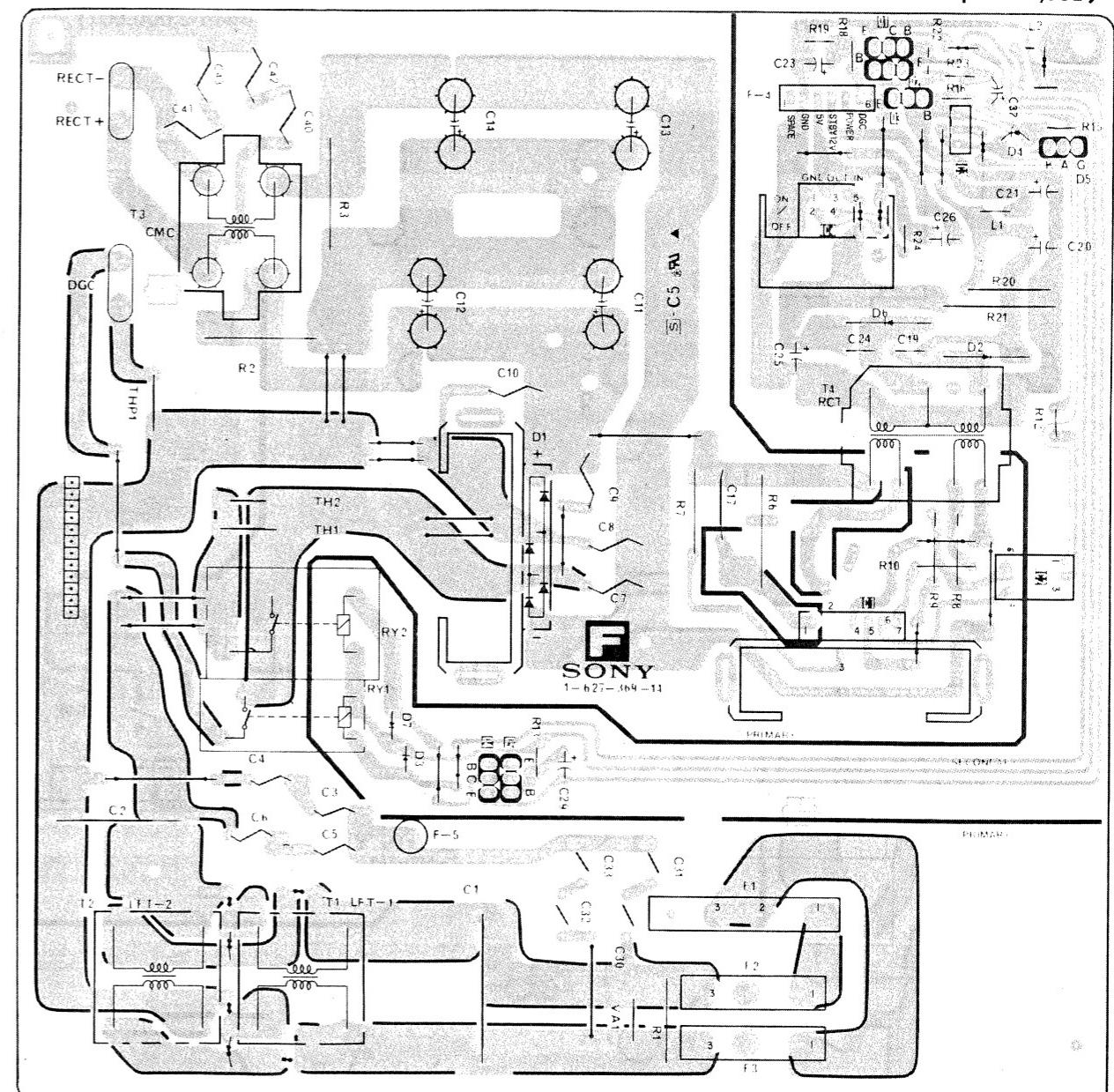
(DDM-2802C/2801C2/2802C2; Serial No. 10,001 and higher)



**F** (POWER SW, AC FILTER, AC RECT, 5V, STBY 12V)

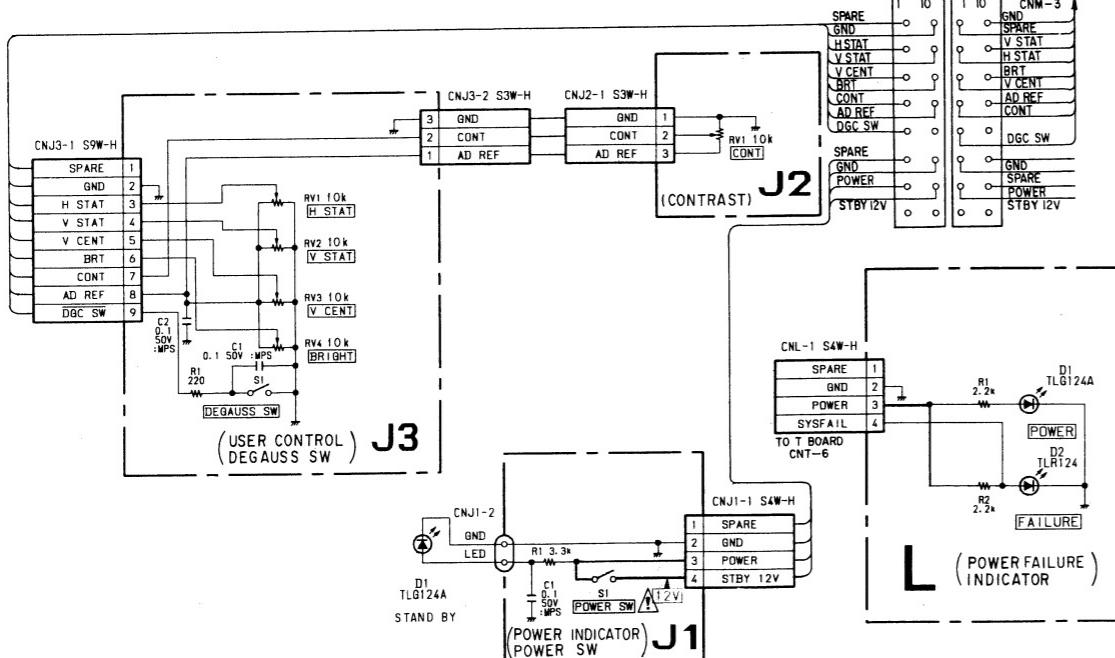
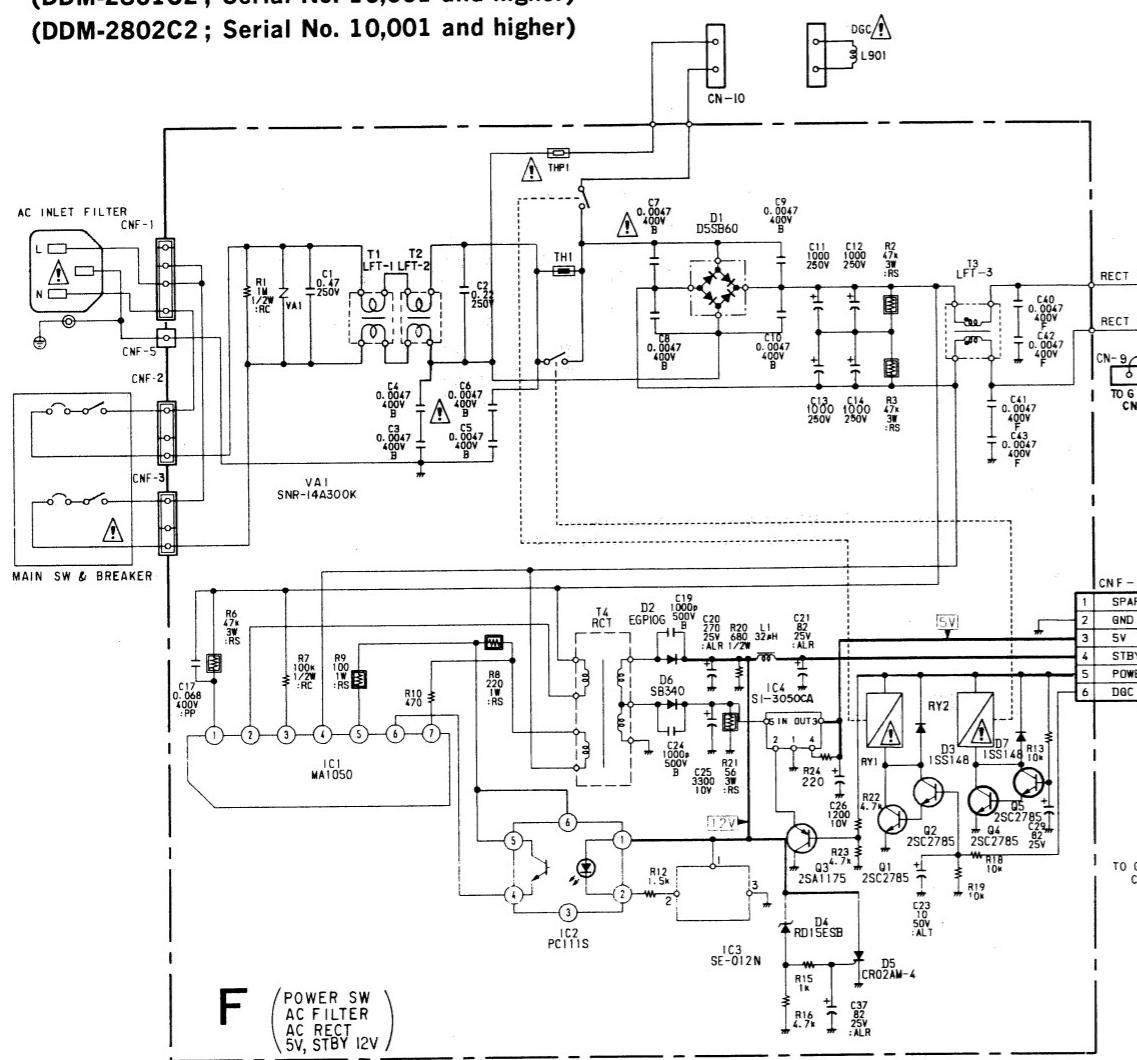
—F BOARD—

(DDM-2801C2; Serial No. up-to 10,001)  
(DDM-2802C2; Serial No. up-to 10,001)

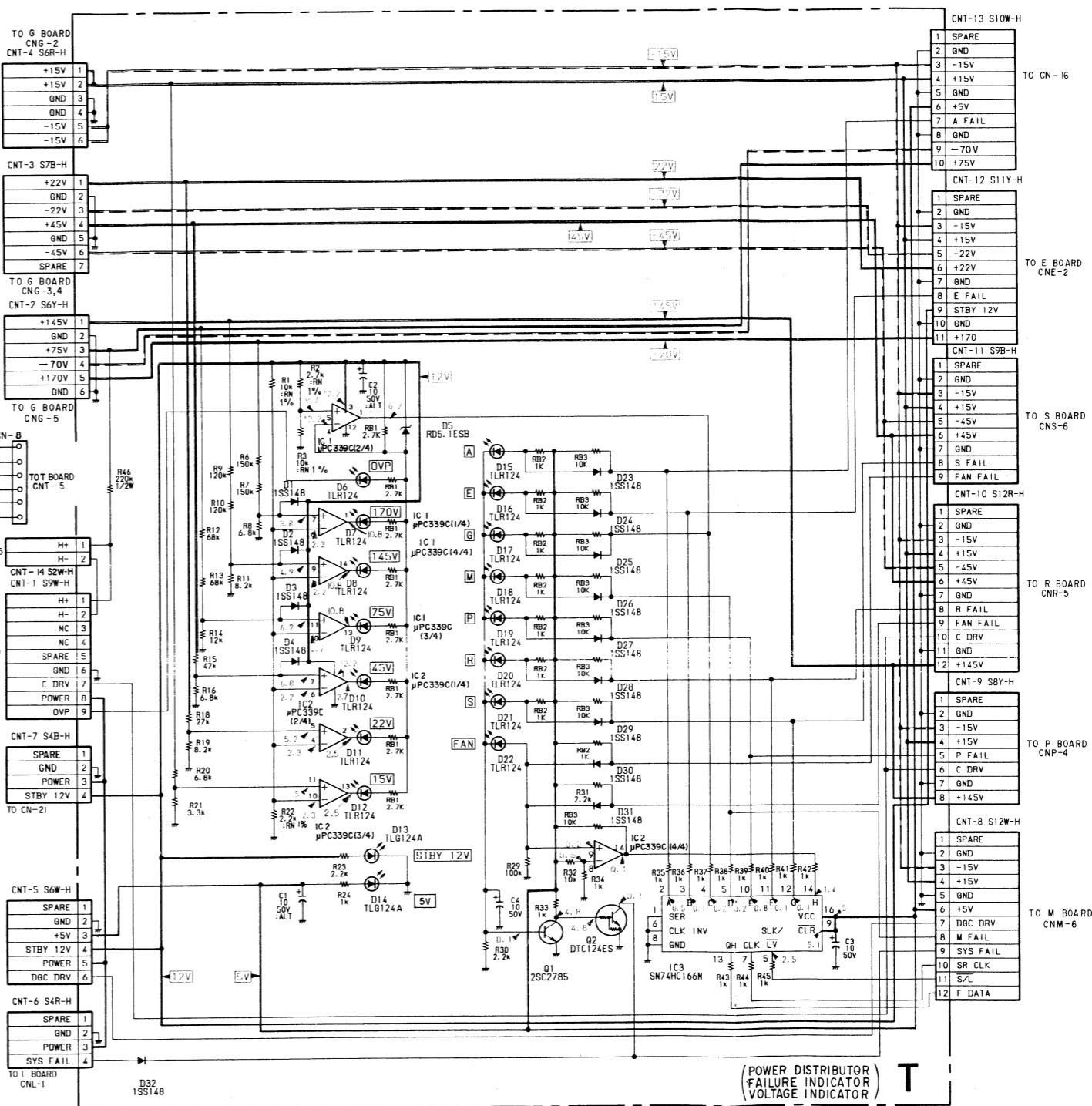


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

**F BOARD 200V—240V**  
(DDM-2801C2; Serial No. 10,001 and higher)  
(DDM-2802C2; Serial No. 10,001 and higher)



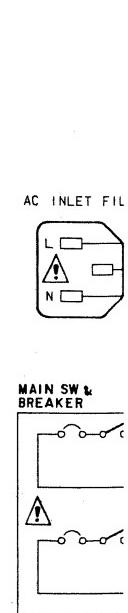
**T BOARD**  
(DDM-2801C; Serial No. 2,000,019 and higher) (DDM-2801C2; Serial No. 2,000,004 and higher)  
(DDM-2802C; Serial No. 2,000,001 and higher) (DDM-2802C2; Serial No. 2,000,002 and higher)



**J1 and J2 BOARD**  
(DDM-2801C; Serial No. 10,031 and higher)  
(DDM-2802C/2801C2/2802C2; Serial No. 10,001 and higher)

**J3 BOARD**  
(DDM-2801C; Serial No. 2,000,019 and higher)  
(DDM-2802C; Serial No. 2,000,001 and higher)  
(DDM-2801C2; Serial No. 2,000,004 and higher)  
(DDM-2802C2; Serial No. 2,000,006 and higher)

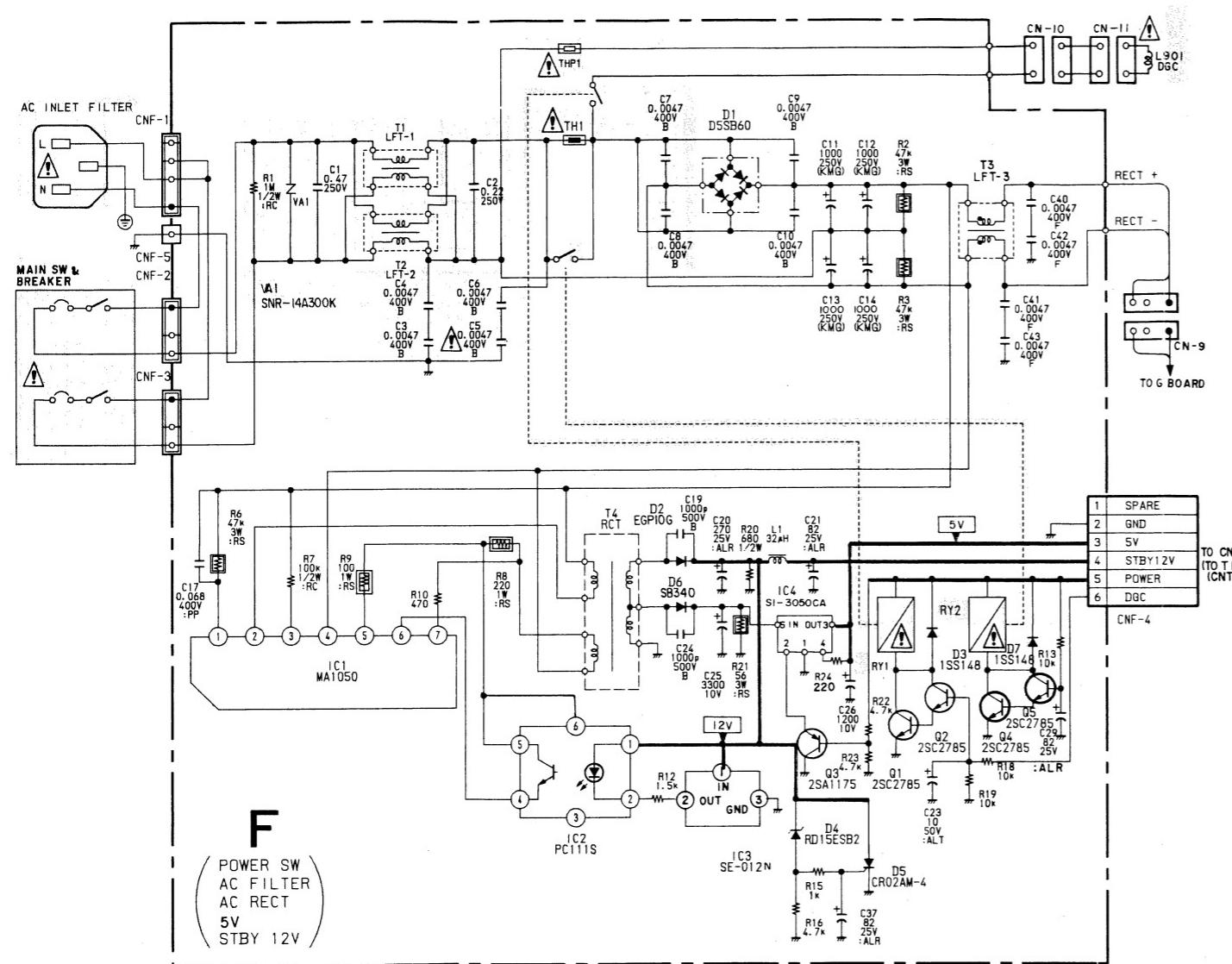
**F BOAR**  
(DDM-2801C2/2802C2; Serial No. 10,001 and higher)



Note:

Note:

- F BOARD 100V—120V  
(DDM-2801C2; Serial No. 10,001 and higher)  
(DDM-2802C2; Serial No. 10,001 and higher)

**Note:**

Note: The components identified by shading and mark are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par une trame et par une marque sont d'une importance critique pour la sécurité. Ne les remplacer que par des pièces de numéro spécifié.

**—F Board—**

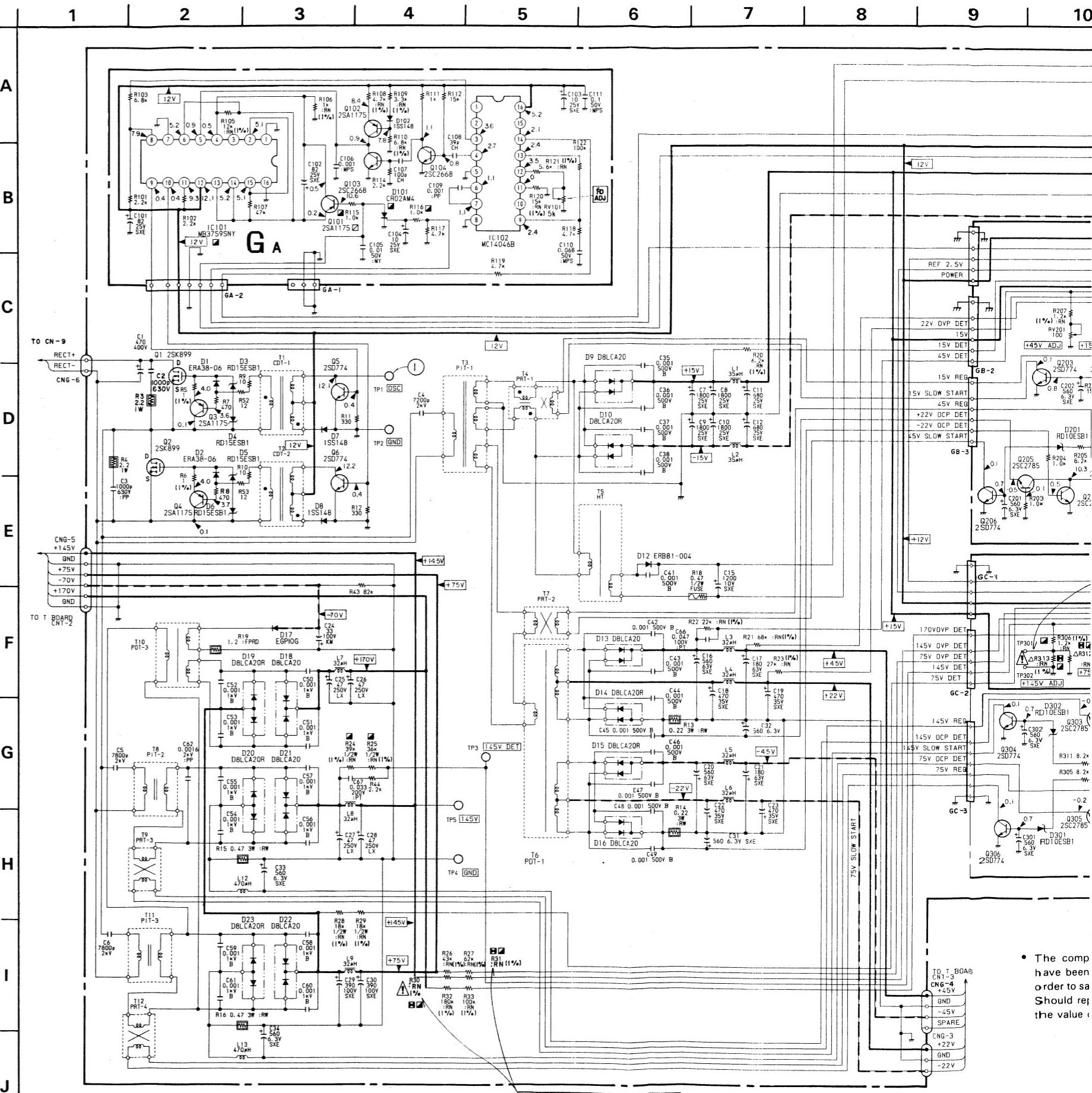
IC1	MA1050	CONVERTER DRIVE/OUT
2	PC111S	PHOTO CUPPLER
3	SE012	12V ERROR AMP
4	S13050C	5V REGULATOR
Q1	2SC2785	RY1 DRIVE 1
2	2SC2785	RY1 DRIVE 2
3	2SC2785	RY2 DRIVE 1
4	2SC2785	RY2 DRIVE 2
5	ZSA1175	5V ON/OFF SWITCH
D1	D5SB60	AC RECT
2	RU2M	STBY 12V RECT
3	ISS148	RY1 PROTECT
4	RD15	12V OVER VOLTAGE DET.
5	CRO2AM4	12V OVER VOLTAGE PROTECTOR
6	ERC81-004	5V RECT
7	ISS148	RY2 PROTECT

**—L Board—**

D1	POWER INDICATOR
2	FAILURE INDICATOR

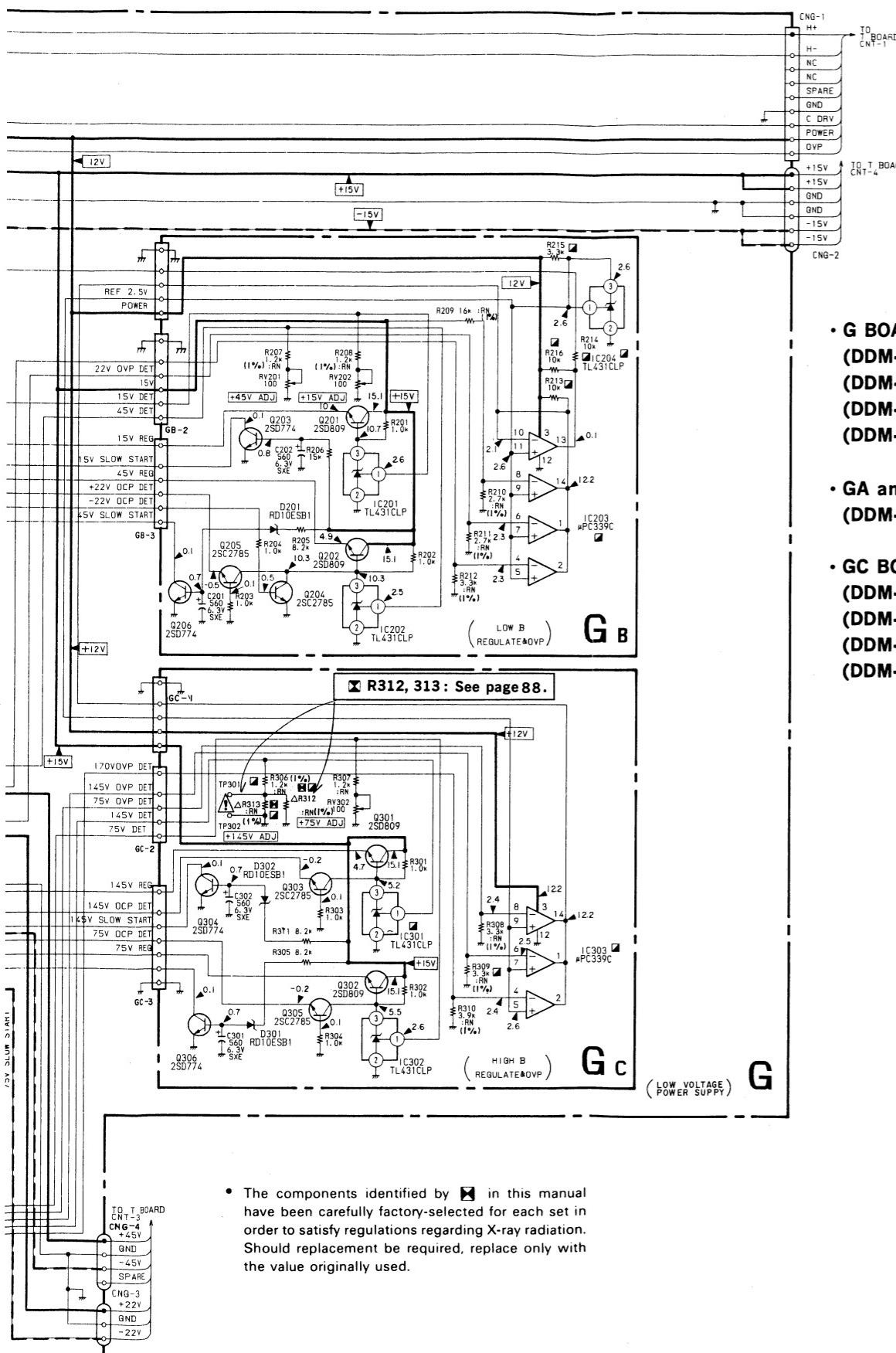
**—T Board—**

IC1	COMPARATOR
2	COMPARATOR
3	SHIFT REGISTER
Q1	FAIL
2	SYSTEM FAIL
D1	CLAMP
2	CLAMP
3	CLAMP
4	CLAMP
5	ZENER DIODE
6	OVP INDICATOR
7	170V INDICATOR
8	145V INDICATOR
9	75V INDICATOR
10	45V INDICATOR
11	22V INDICATOR
12	15V INDICATOR
13	STBY 12V INDICATOR
14	5V INDICATOR
15	A INDICATOR
16	E INDICATOR
17	G INDICATOR
18	M INDICATOR
19	P INDICATOR
20	R INDICATOR
21	S INDICATOR
22	FAN INDICATOR
23	A SWITCH
24	E SWITCH
25	G SWITCH
26	M SWITCH
27	P SWITCH
28	R SWITCH
29	S SWITCH
30	FAN SWITCH
31	FAN SWITCH



- The comp  
have been  
order to sa  
Should rep  
the value (

8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18

**G BOARD**

(DDM-2801C; Serial No. 2,000,006 and higher)  
 (DDM-2802C; Serial No. 2,000,001 and higher)  
 (DDM-2801C2; Serial No. 2,000,004 and higher)  
 (DDM-2802C2; Serial No. 2,000,002 and higher)

**GA and GB BOARD**

(DDM-2801C/2802C/2801C2/2802C2; Serial No. 10,001 and higher)

**GC BOARD**

(DDM-2801C; Serial No. 2,000,006 and higher)  
 (DDM-2802C; Serial No. 2,000,001 and higher)  
 (DDM-2801C2; Serial No. 2,000,004 and higher)  
 (DDM-2802C2; Serial No. 2,000,002 and higher)

X R312, 313: See page 88.

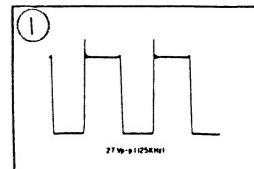
Note: The components identified by shading and mark are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par une trame et par une marque sont d'une importance critique pour la sécurité. Ne les remplacer que par des pièces de numéro spécifié.

- The components identified by in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

**G Board**

Q1	2SK899	CONVERTER OUT 1
2	2SK899	CONVERTER OUT 2
3	2SA1175	SPEED UP 1
4	2SA1175	SPEED UP 2
5	2SD774A	CONVERTER DRIVE 1
6	2SD774A	CONVERTER DRIVE 2
D1	ERA38-06	SPEED UP 1
2	ERA38-06	SPEED UP 2
3	R015	CONVERTER OUT GATE PROTECT 1
4	RD15	CONVERTER OUT GATE PROTECT 2
5	RD15	CONVERTER OUT GATE PROTECT 3
6	RD15	CONVERTER OUT GATE PROTECT 4
7	1SS148	DAMPER 1
8	1SS148	DAMPER 2
9		+15V RECT
10		-15V RECT
12		6.3V RECT
13		+45V RECT
14		+22V RECT
15		-45V RECT
16		-22V RECT
17		-70V RECT
18		170V RECT 1
19		170V RECT 2
20		145V RECT 1
21		145V RECT 2
22		+75V RECT 1
23		+75V RECT 2

**G Board****GA Board**

IC101	OSC/PRE DRIVE
102	PLL
Q101	PULSE WIDTH LIMIT
102	H SAW GENERATOR 1
103	H SAW GENERATOR 2
104	CURRENT SOURCE
D101	OVER VOLTAGE PROTECTOR
102	CURRENT SOURCE

**GB Board**

IC201	+15V ERROR AMP
202	+45V ERROR AMP
203	OVP COMPARATOR
204	2.5V ZENOR
Q201	+15V REGULATOR
202	+45V REGULATOR
203	+15V SOFT START
204	-45V CURRENT LIMIT
205	+45V CURRENT LIMIT
206	+45V SOFT START
D201	SOFT START SWITCH

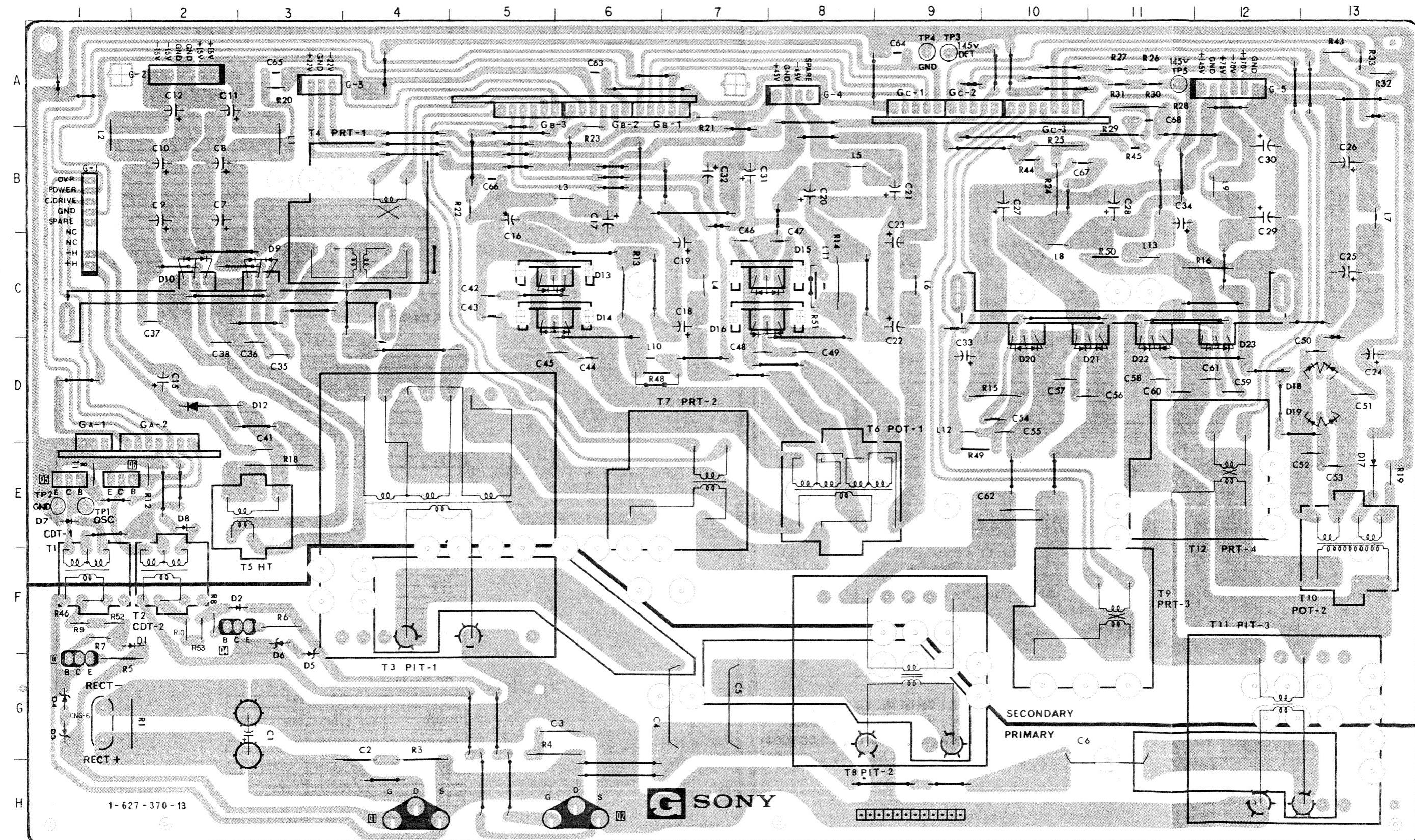
**GC Board**

IC301	145V ERROR AMP
302	75V ERROR AMP
303	OVP COMPARATOR
Q301	145V REGULATOR
302	75V REGULATOR
303	145V CURRENT LIMIT
304	145V SOFT START
305	75V CURRENT LIMIT
306	75V SOFT START
D301	145V SOFT START SWITCH
302	75V SOFT START SWITCH

G

#### **(LOW VOLTAGE POWER SUPPLY**

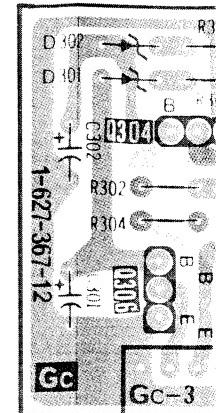
**—G BOARD—** (DDM-2801C ; Serial No. 2,000,006 and higher)  
(DDM-2802C ; Serial No. 2,000,001 and higher)  
(DDM-2801C2 ; Serial No. 2,000,004 and higher)  
(DDM-2802C2 ; Serial No. 2,000,002 and higher)



G

GC

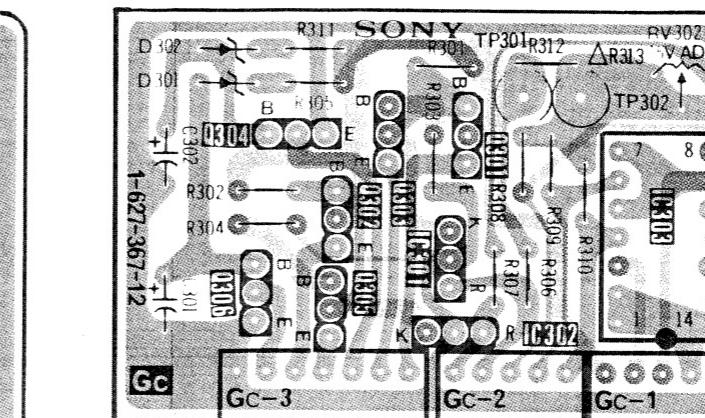
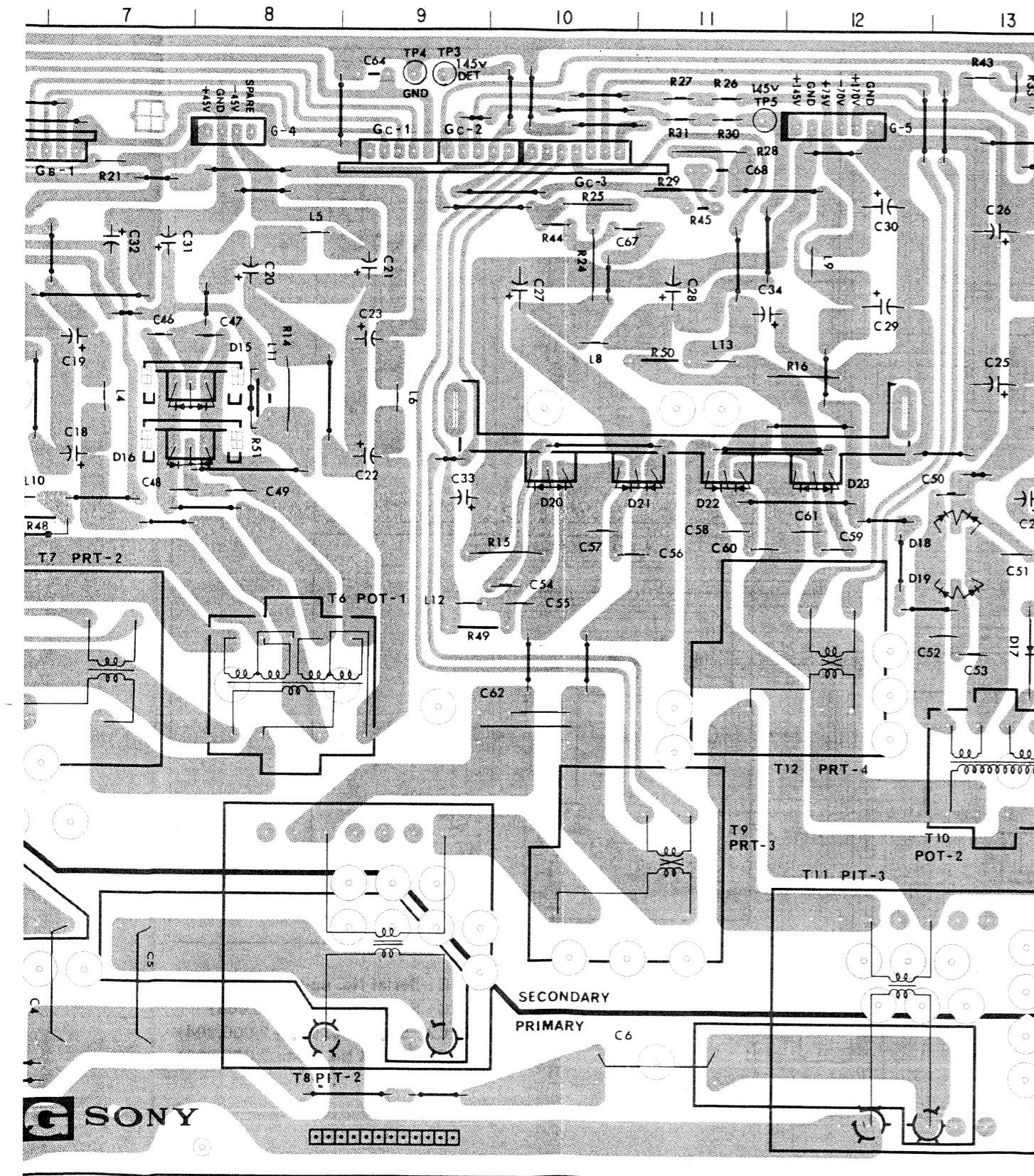
—GC BOARD— (



**G****GC**

(HIGH B REGULATE and OVP)

**-GC BOARD-** (DDM-2801C; Serial No. 2,000,006 and higher)  
 (DDM-2802C; Serial No. 2,000,001 and higher)  
 (DDM-2801C2; Serial No. 2,000,004 and higher)  
 (DDM-2802C2; Serial No. 2,000,002 and higher)

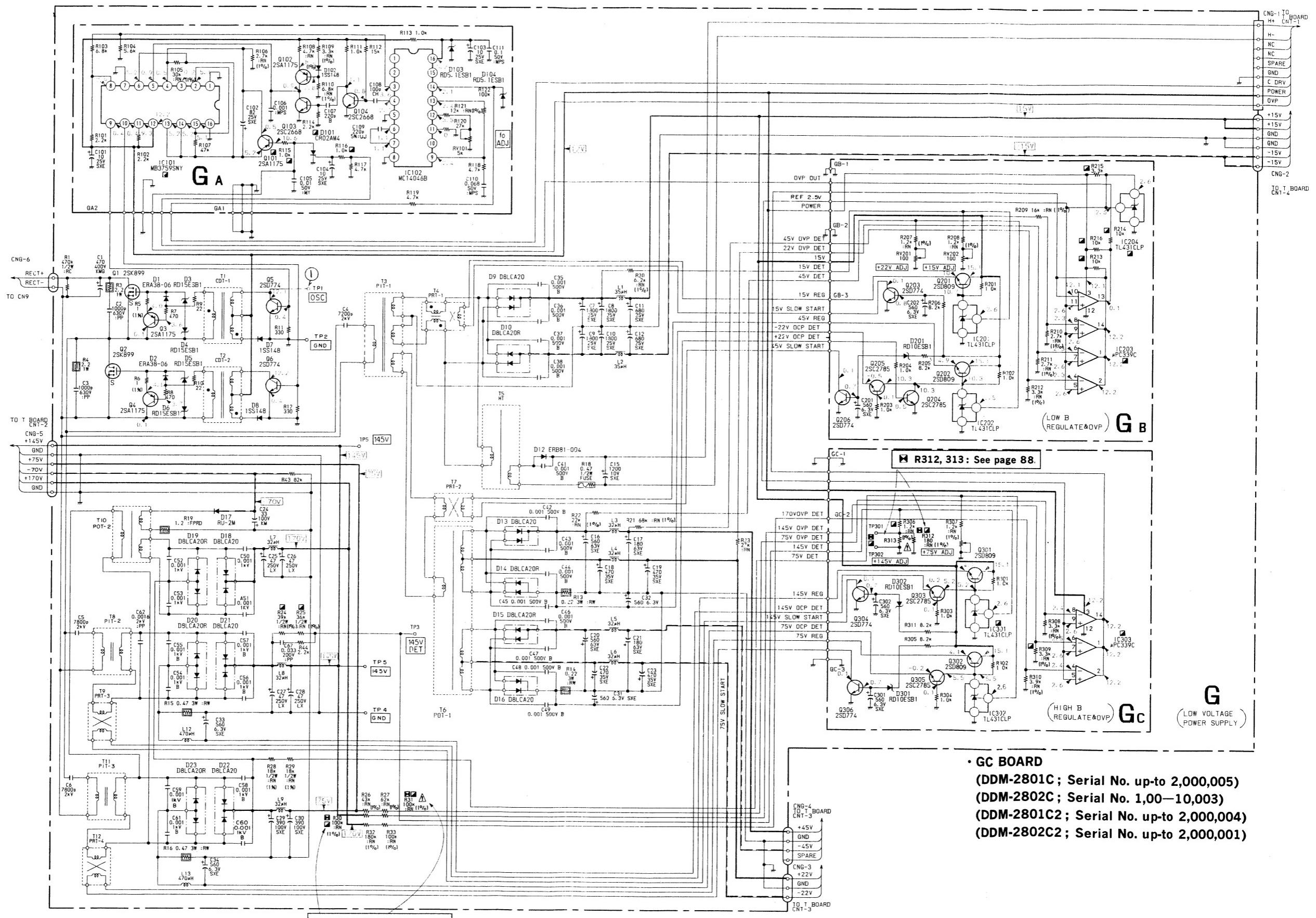


■ : Pattern from the side which enables seeing  
 □ : Pattern of the rear side.

**NOTE:**

The circuit indicated as left contains high voltage of over 600 Vp-p. Care must be paid to prevent an electric shock in inspection or repairing.

• G, GA, GB, GC BOARDS (DDM-2801C ; Serial No. up-to 2,000,005) (DDM-2801C2 ; Serial No. up-to 2,000,003  
(DDM-2802C ; Serial No. 10,001—10,003) (DDM-2802C2 ; Serial No. up-to 2,000,001



**G C BOARD**  
G C DDM-2801C ; Serial No. up-to 2,000,005)  
G C DDM-2802C ; Serial No. 1,00—10,003)  
G C DDM-2801C2 ; Serial No. up-to 2,000,004)  
G C DDM-2802C2 ; Serial No. up-to 2,000,001)

A

B

C

D

E

F

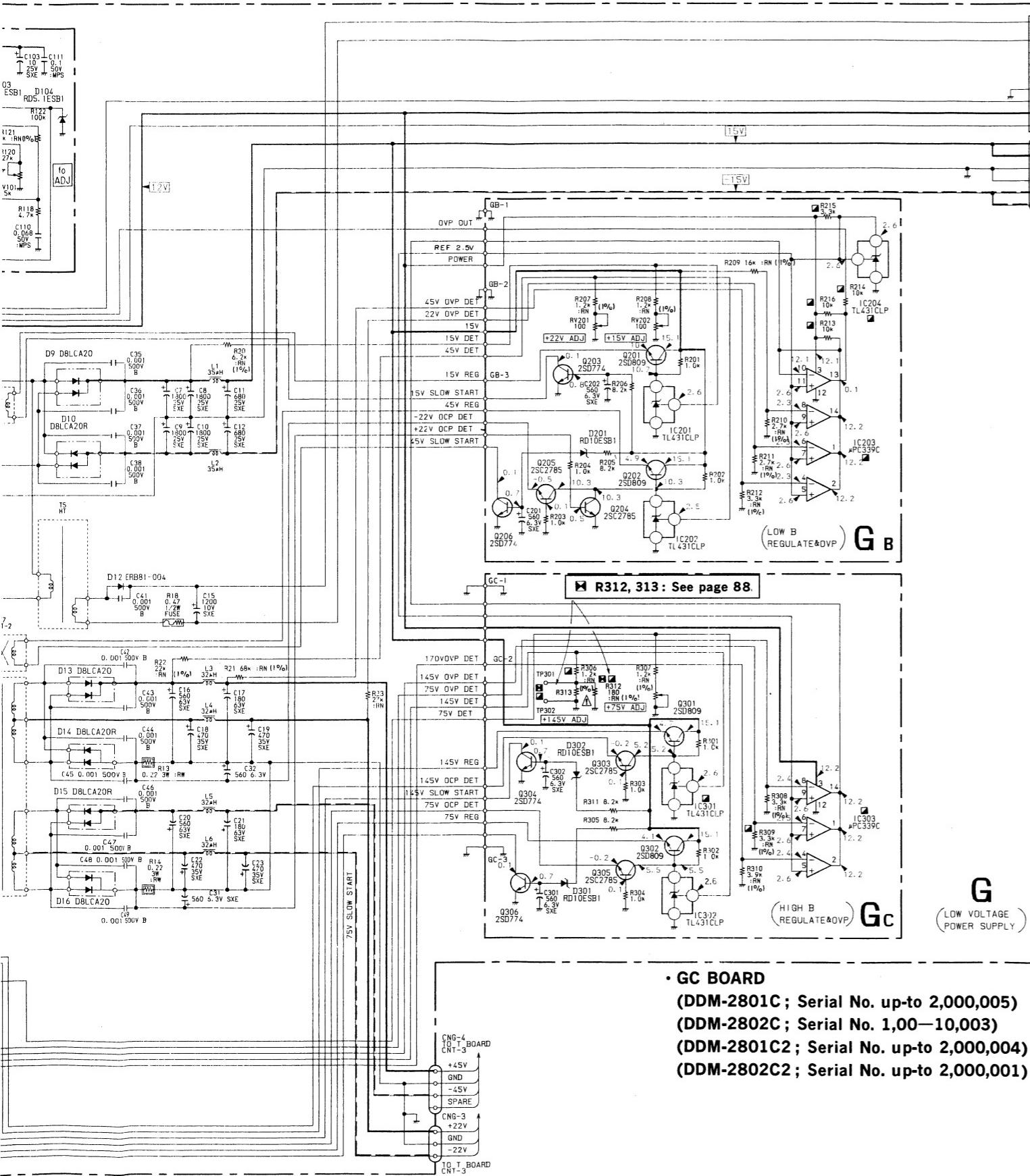
G

H

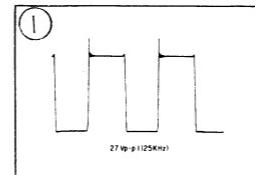
I

J

o-to 2,000,003)  
o-to 2,000,001)



**G Board**



**G Board**

Q1	2SK899	CONVERTER OUT 1
2	2SK899	CONVERTER OUT 2
3	2SA1175	SPEED UP 1
4	2SA1175	SPEED UP 2
5	2SD774A	CONVERTER DRIVE 1
6	2SD774A	CONVERTER DRIVE 2
D1	ERA38-06	SPEED UP 1
2	ERA38-06	SPEED UP 2
3	RD15	CONVERTER OUT GATE PROTECT 1
4	RD15	CONVERTER OUT GATE PROTECT 2
5	RD15	CONVERTER OUT GATE PROTECT 3
6	RD15	CONVERTER OUT GATE PROTECT 4
7	1SS148	DAMPER 1
8	1SS148	DAMPER 2
9		+15V RECT
10		-15V RECT
12		6.3V RECT
13		+45V RECT
14		+22V RECT
15		-45V RECT
16		-22V RECT
17		-70V RECT
18		170V RECT 1
19		170V RECT 2
20		145V RECT 1
21		145V RECT 2
22		+75V RECT 1
23		+75V RECT 2

**GA Board**

IC101	OSC/PRE DRIVE
102	PLL
Q101	PULSE WIDTH LIMIT
102	H SAW GENERATOR 1
103	H SAW GENERATOR 2
104	CURRENT SOURCE
D101	OVER VOLTAGE PROTECTOR
102	CURRENT SOURCE
103	5V REGULATOR
104	5V CLAMP

**GB Board**

IC201	+15V ERROR AMP
202	+45V ERROR AMP
203	OVP COMPARATOR
204	2.5V ZENOR
Q201	+15V REGULATOR
202	+45V REGULATOR
203	+15V SOFT START
204	-45V CURRENT LIMIT
205	+45V CURRENT LIMIT
206	+45V SOFT START
D201	SOFT START SWITCH

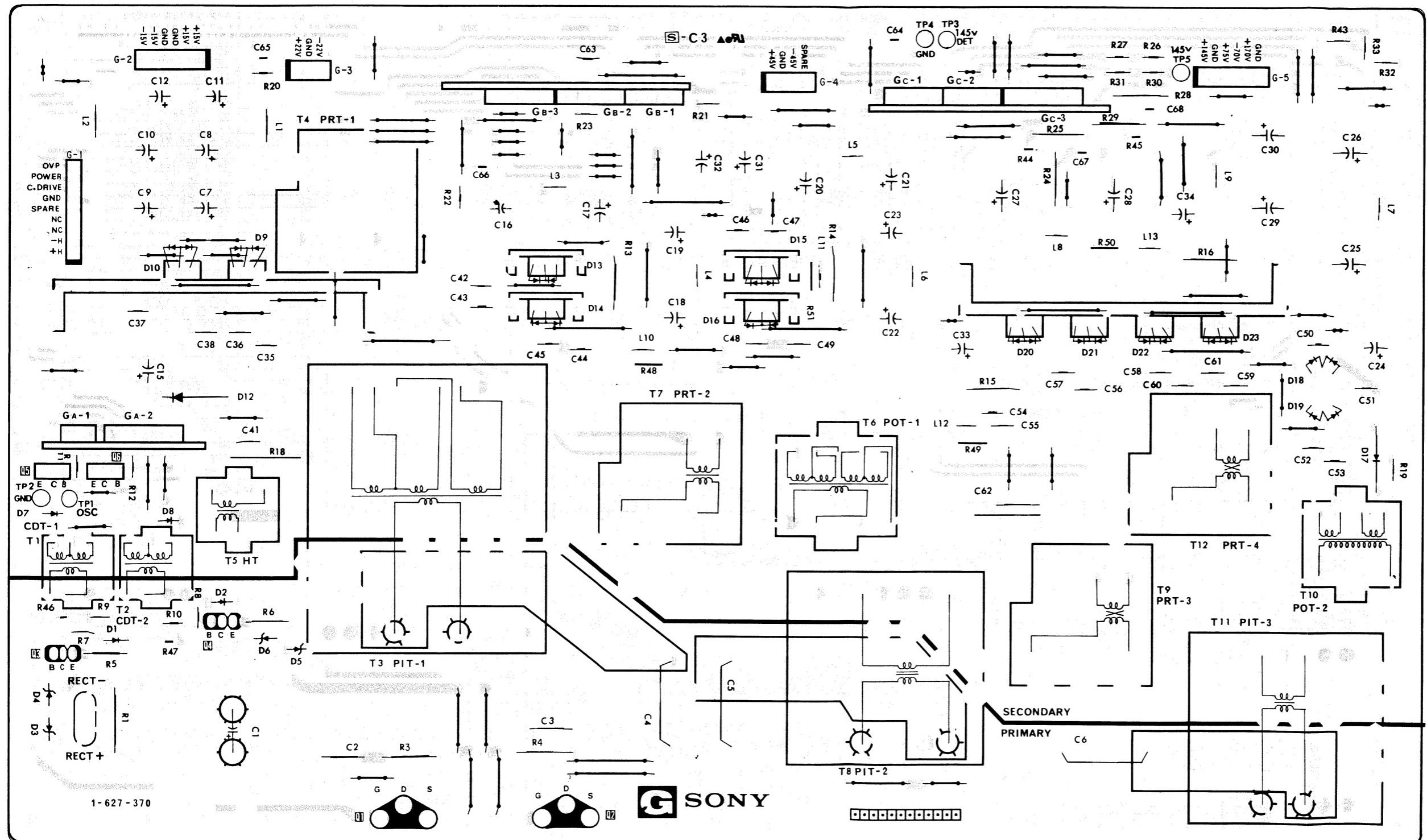
**GC Board**

IC301	145V ERROR AMP
302	75V ERROR AMP
303	OVP COMPARATOR
Q301	145V REGULATOR
302	75V REGULATOR
303	145V CURRENT LIMIT
304	145V SOFT START
305	75V CURRENT LIMIT
306	75V SOFT START
D301	145V SOFT START SWITCH
302	75V SOFT START SWITCH

G

(LOW VOLTAGE POWER SUPPLY)

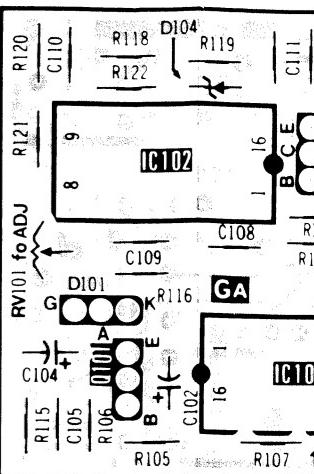
**—G BOARD—** (DDM-2801C; Serial No. up-to 2,000,005) (DDM-2801C2; Serial No. up-to 2,000,003)  
(DDM-2802C; Serial No. 10,001—10,003) (DDM-2802C2; Serial No. up-to 2,000,001)



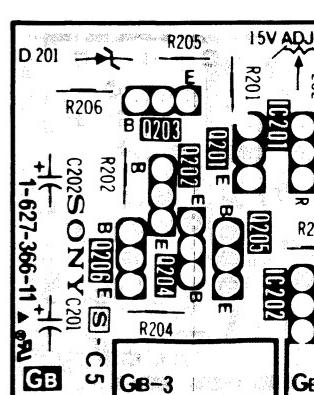
G

GA

—GA Board—



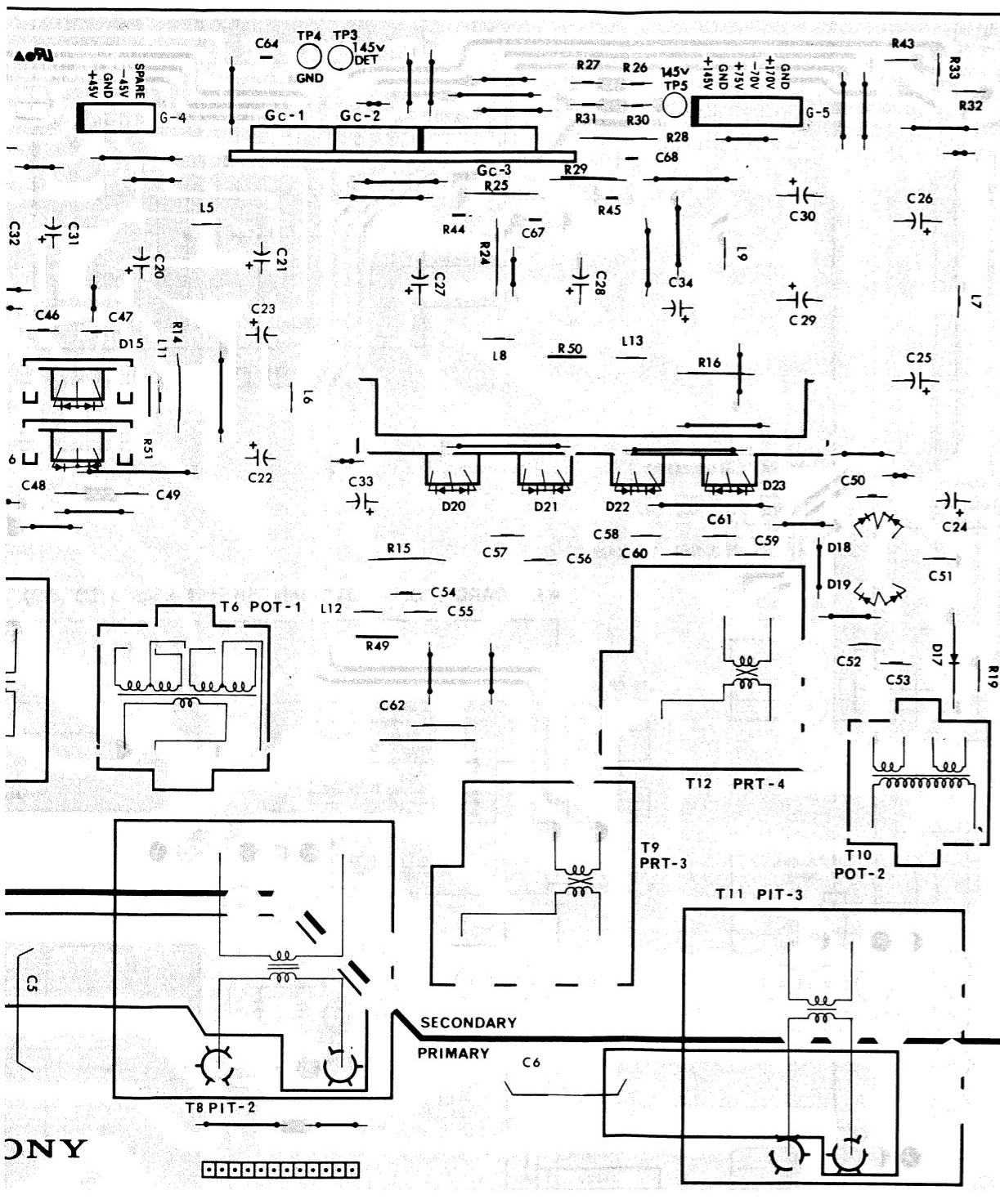
—GB Board—



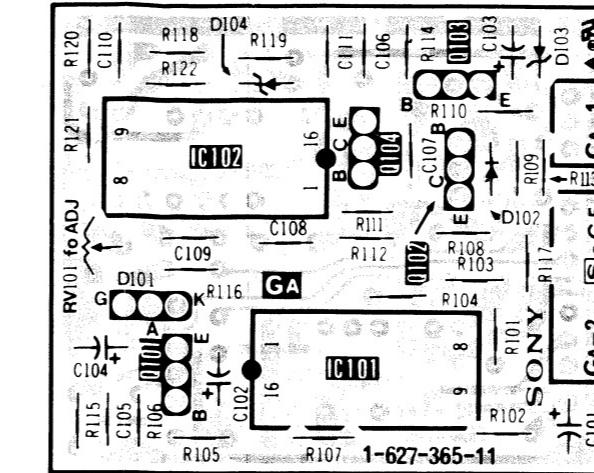
**NOTE:**

The circuit indicated as 600 Vp-p. Care must be paid to inspection or repairing.

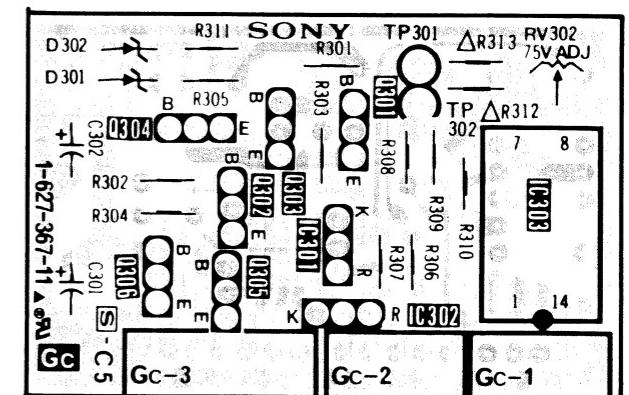
G GA GB GC



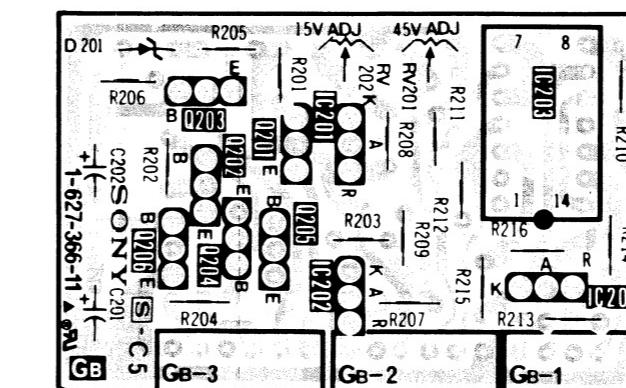
—GA Board—



—GC Board— (DDM-2801C; Serial No. up-to 2,000,005)  
(DDM-2802C; Serial No. 1,00—10,003)  
(DDM-2801C2; Serial No. up-to 2,000,004)  
(DDM-2802C2; Serial No. up-to 2,000,001)



—GB Board—



NOTE:

The circuit indicated as left contains high voltage of over 600 Vp-p. Care must be paid to prevent an electric shock in inspection or repairing.

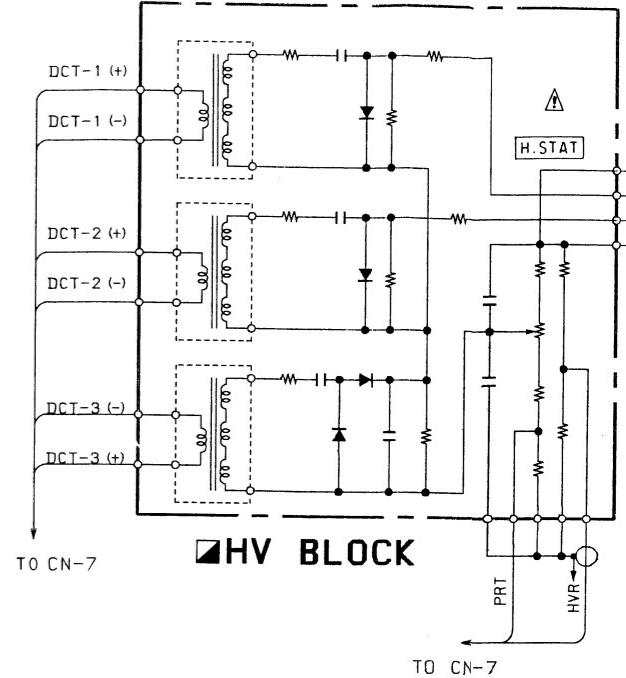
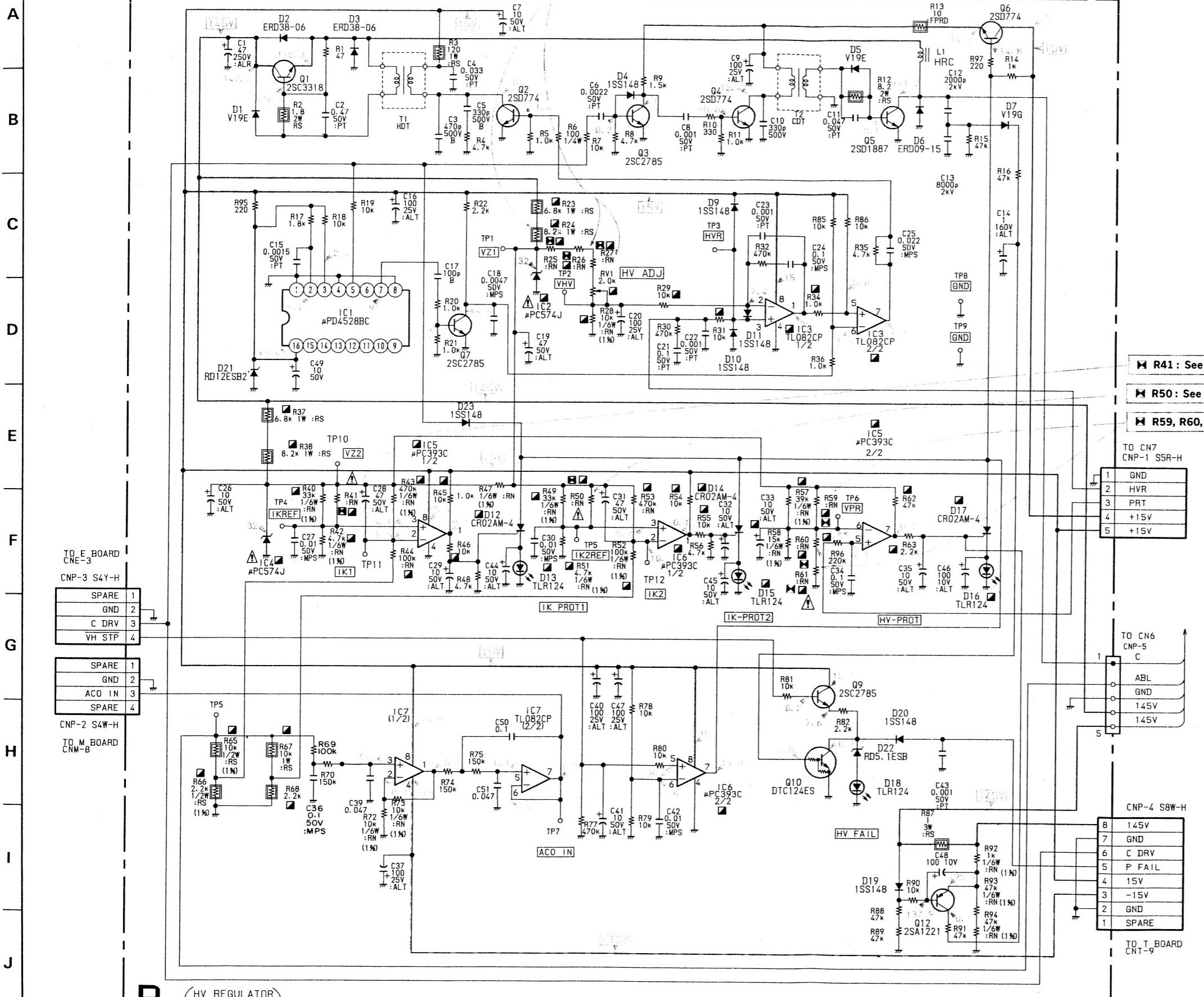


- : Pattern from the side which enables seeing
- : Pattern of the rear side.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

• P BOARD (DDM-2801C only, Serial No. up-to 10,020)

R25, R26, R27: See page 90.

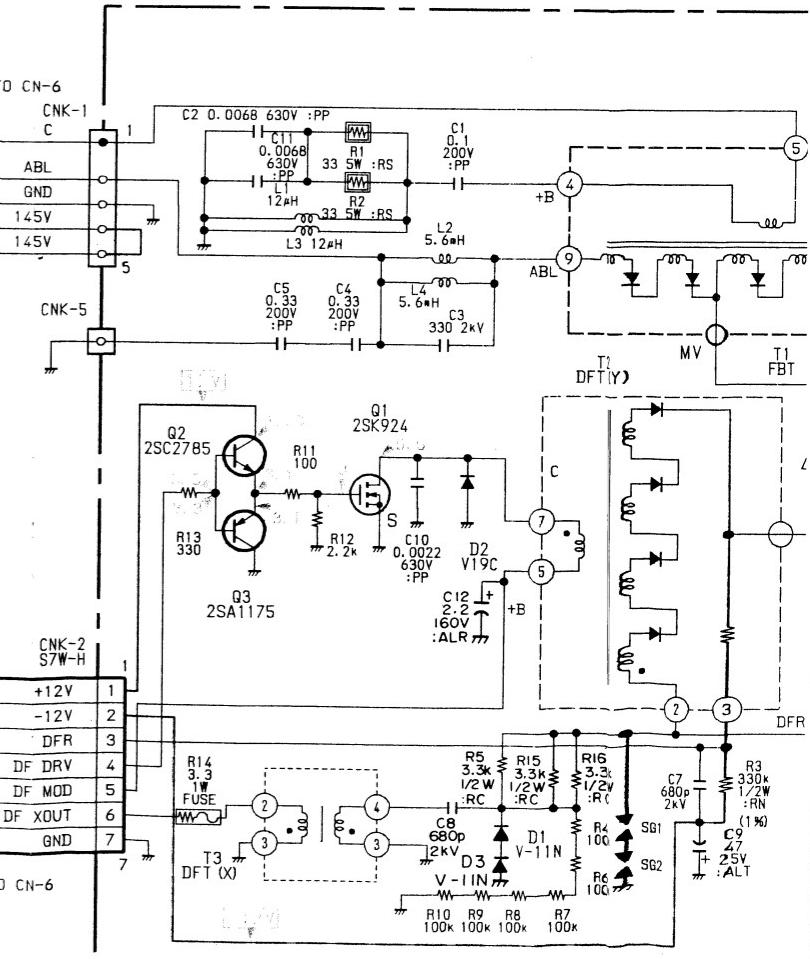


R41: See page 91.

R50: See page 93.

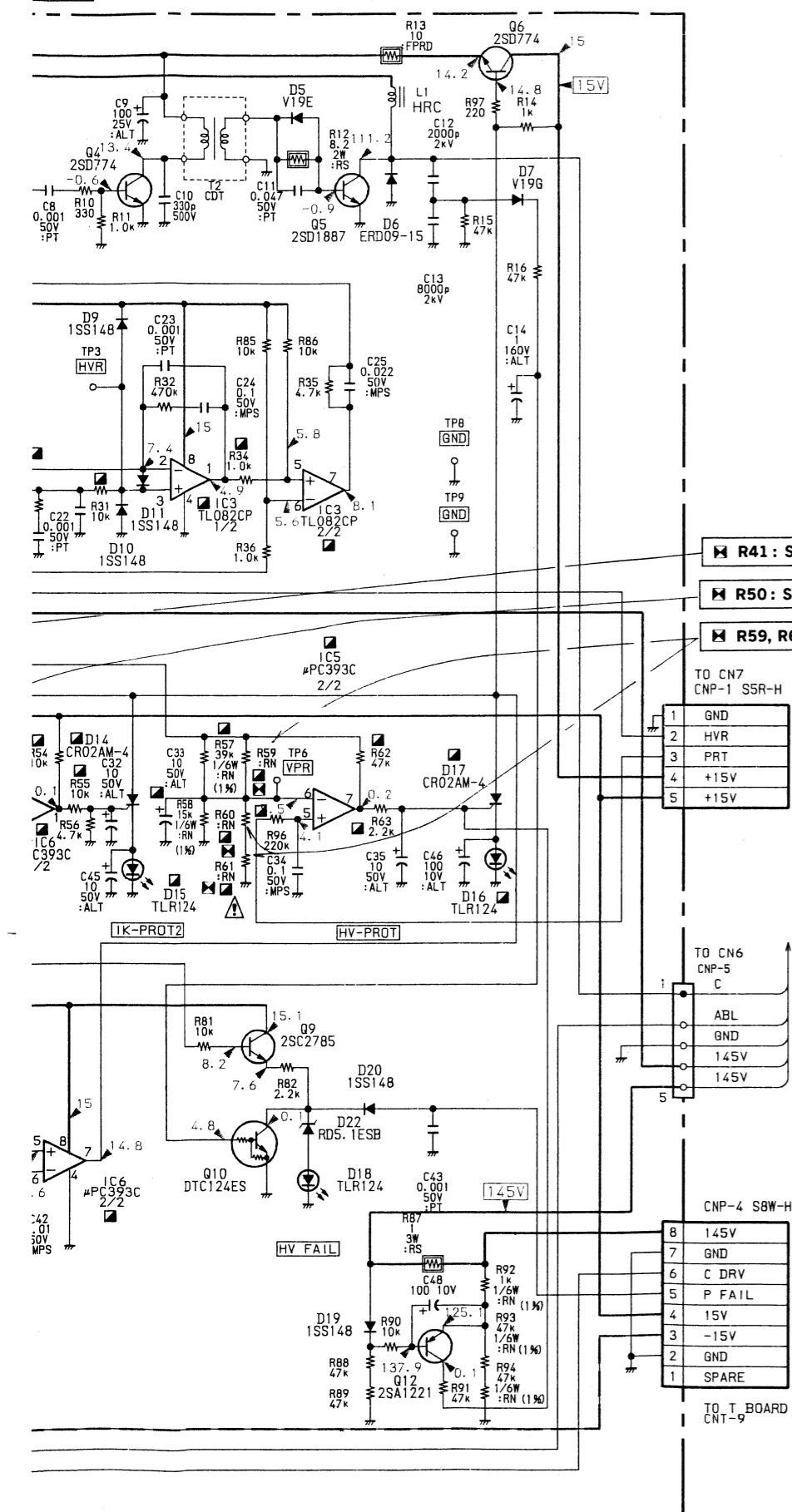
R59, R60, R61: See page 90.

• K BOARD (DDM-2801C only, Serial No. up-to 10,090)



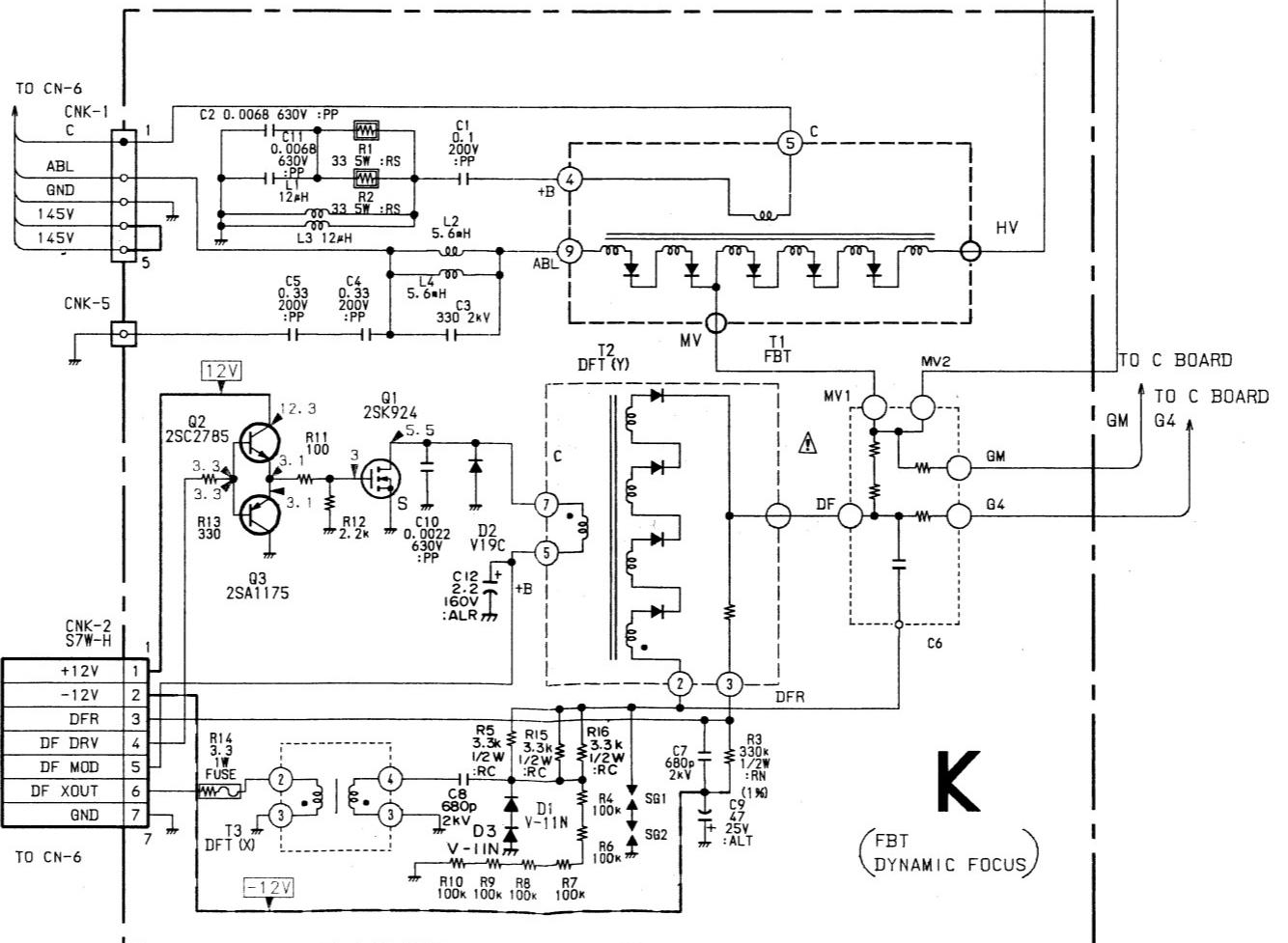
7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19

age 90.



■ R41: See page 91.  
■ R50: See page 93.  
■ R59, R60, R61: See page 90.

● K BOARD (DDM-2801C only, Serial No. up-to 10,090)



-201-

—P Board—

	MONO MULTI
1	32V ZENER DIODE
2	ERROR AMP
3	32V ZENER DIODE
4	HV PROTECT
5	IK PROTECT
6	IK AMP
7	
Q1	HV CONTROL OUT
2	HV CONTROL DIRVE
3	HV PRE DRIVE
4	CONV DRIVE
5	CONV OUT
6	HV PROTECT OUT
7	HV SAW
9	VH STOP
10	HV STOP
12	CURRENT LIMIT
D1	HV DRIVE
2	HV OUT
3	HV OUT
4	SPEED UP
5	CONT DRIVE
6	DAMPER DIODE
7	HV RECT
9	PROTECT
10	PROTECT
11	PROTECT
12	IK PROT 1 OUT
13	IK PROT 1 LED
14	IK PROT 2 OUT
15	IK PROT 2 LED
16	HV PROT LED
17	HV PROT OUT
18	HV FAIL LED
19	BIAS
20	P FAIL
21	ZENER DIODE
22	BIAS
23	VH STOP

—K Board—

	FOCUS OUT
1	BUFFER 1
2	BUFFER 2
D1	CLAMP 1
2	DAMPER
3	CLAMP 2

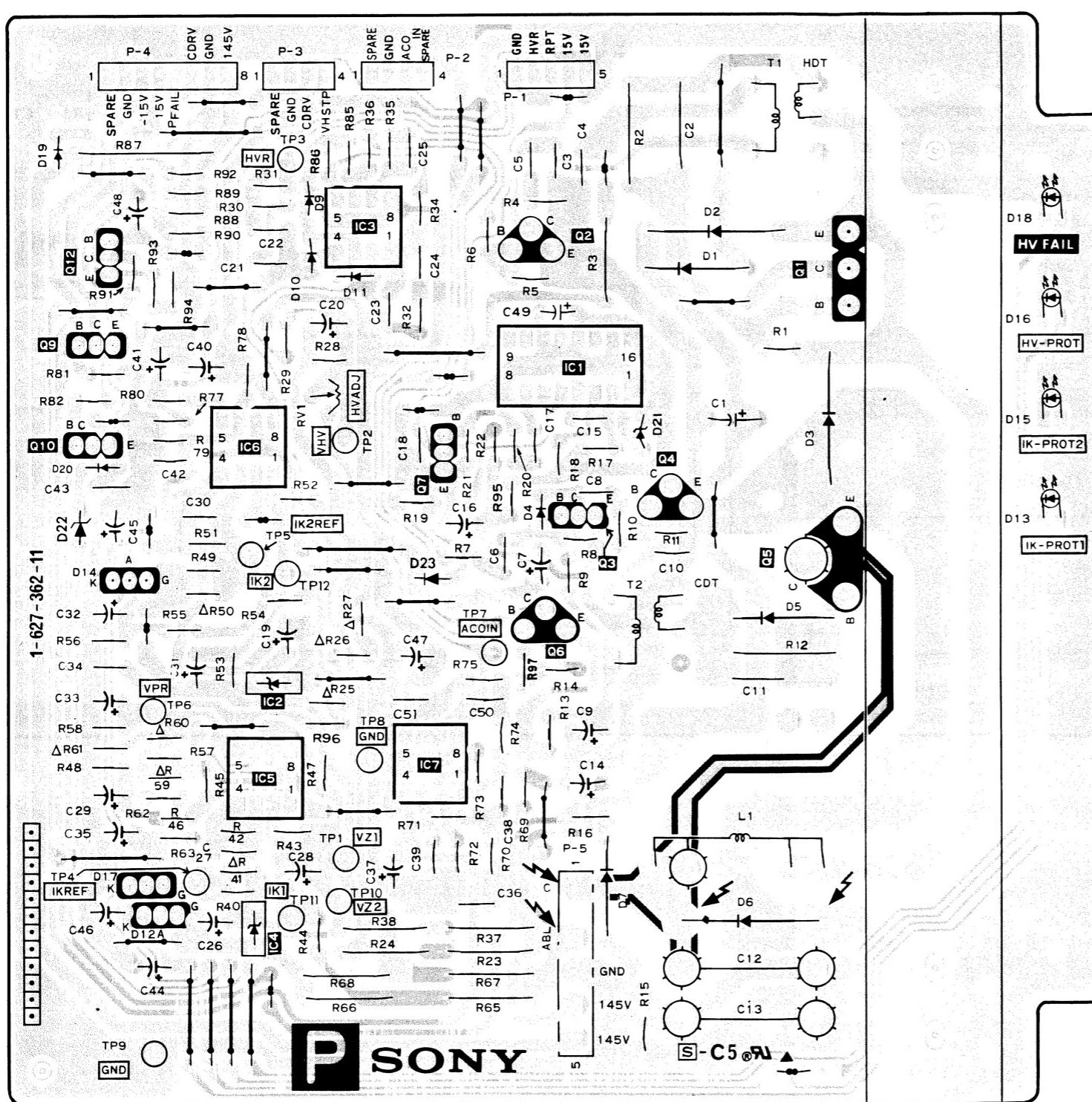
-202-

P

(HV REGULATOR, HV PROTECTOR)

P BOARD—(DDM-2801C only, Serial No. up-to 10,020)

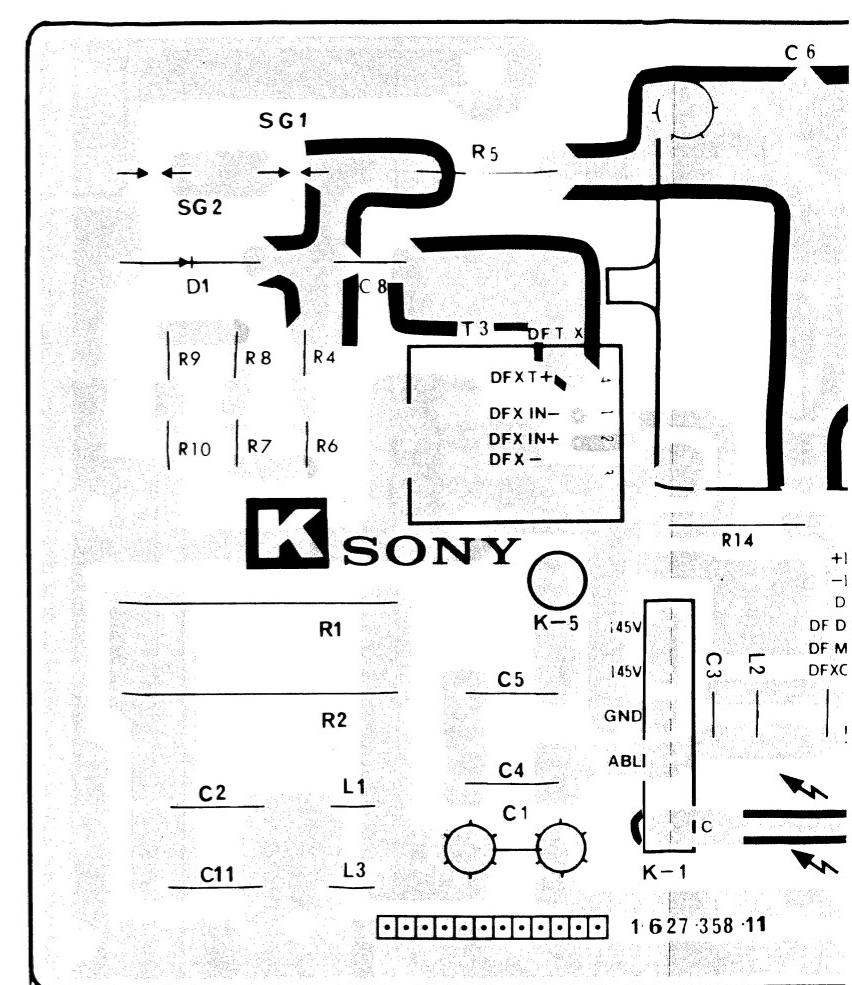
IC	Q	D	RV	TP
				3
		19		
	9	18		
3	2	10		
12	1	11		16
				.
9				15
6	10	7	20	21
3	4	22		3
5	23	12		5
6	14	1		13
2	5	12		4
7	7	6		6
4	17	10		8
4	12	6	11	1
				9



K

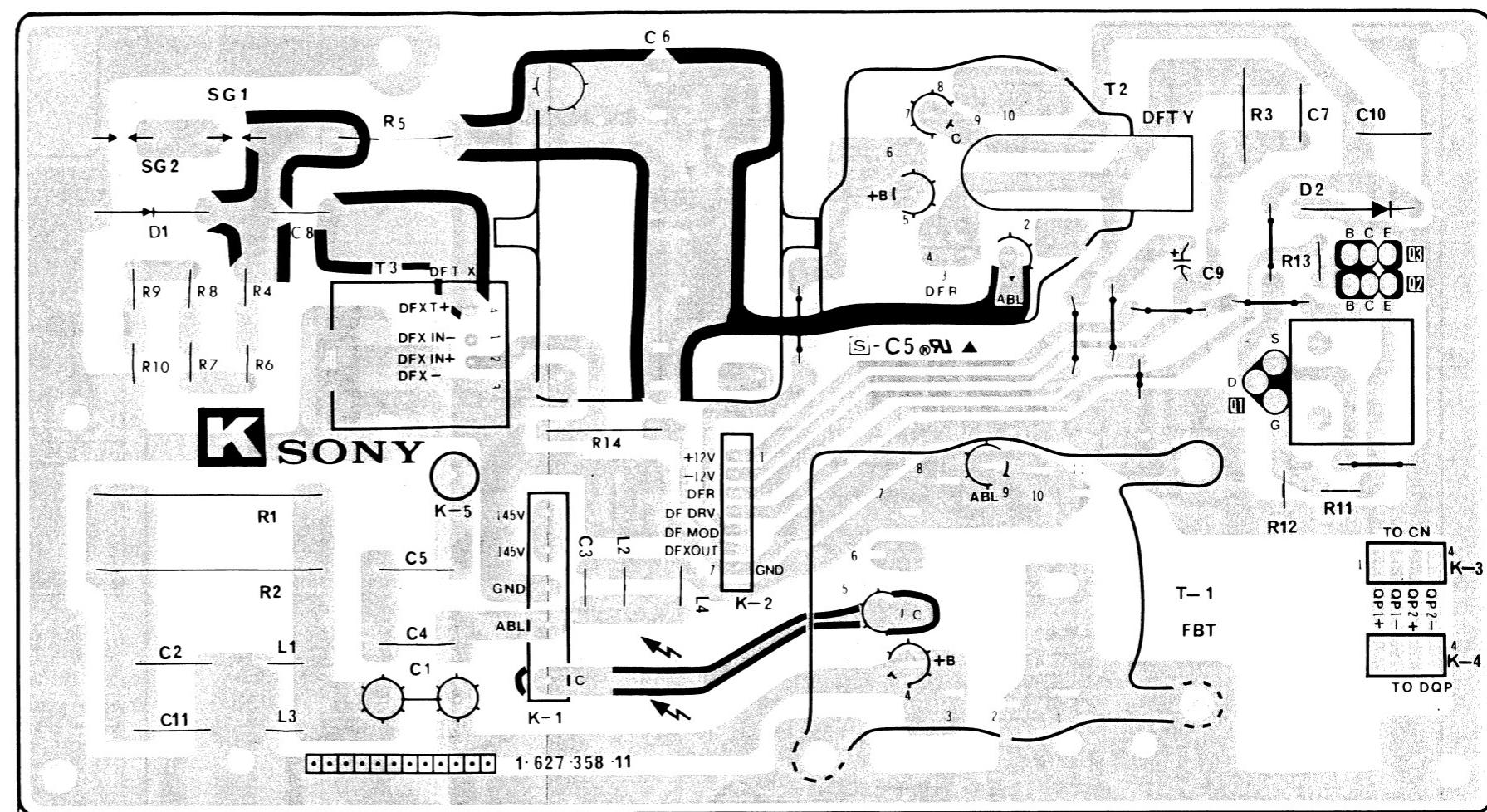
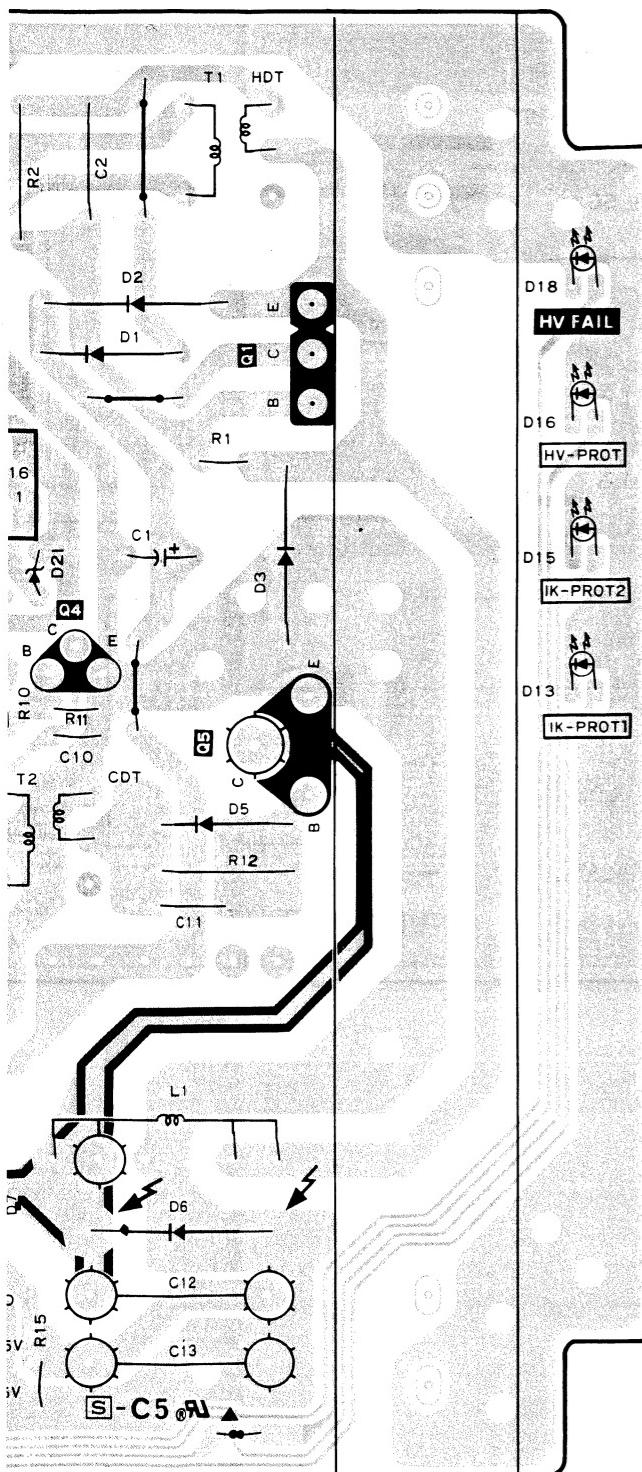
(FBT, DYNAMIC FOCUS)

K BOARD—(DDM-2801C only, Serial No. up-to 10,090)



**K**  
(FBT, DYNAMIC FOCUS)

—K BOARD— (DDM-2801C only, Serial No. up-to 10,090)



**NOTE:**  
The circuit indicated as left contains high voltage of over 600 Vp-p. Care must be paid to prevent an electric shock in inspection or repairing.

**NOTE:**  
The circuit indicated as left contains high voltage of over 600 Vp-p. Care must be paid to prevent an electric shock in inspection or repairing.

**D** (HV REGULATOR, HV PROTECTOR)

—P BOARD— (DDM-2801C; Serial No. 10,021 and higher)  
 (DDM-2802C/2801C2/2802C2; Serial No. 10,001 and higher)

## —P Board—

IC	C-4
IC1	E-2
IC2	B-3
IC3	D-2
IC4	F-2
IC5	E-2
IC6	C-2
IC7	E-3

## TRANSISTOR

Q1	B-5
Q2	B-4
Q3	D-4
Q4	C-4
Q5	D-5
Q6	D-4
Q7	C-3
Q9	B-1
Q10	C-1
Q12	B-1

## DIODE

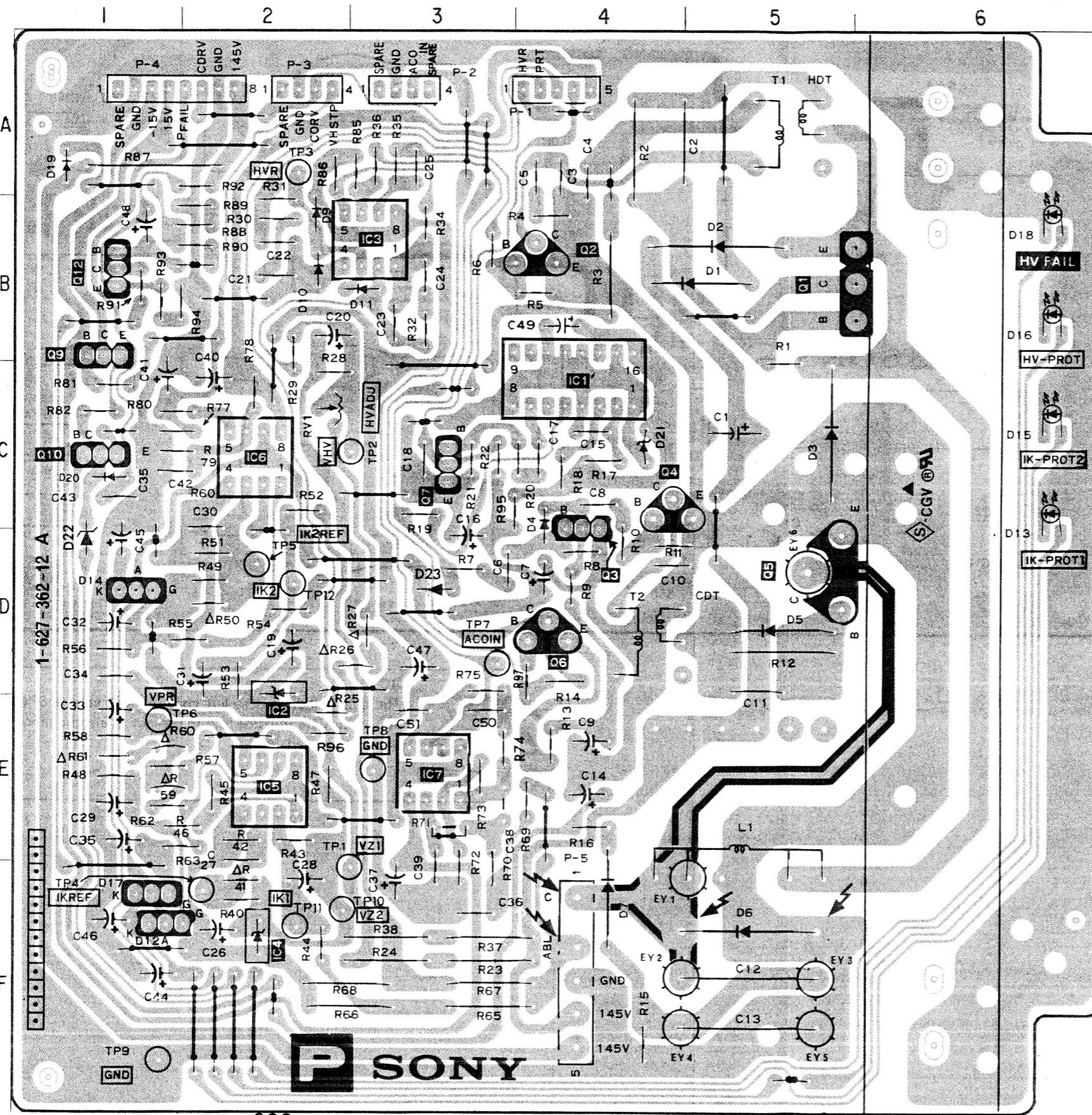
D1	B-5
D2	B-5
D3	C-5
D4	C-4
D5	D-5
D6	F-5
D7	F-4
D9	B-2
D10	B-2
D11	B-3
D12	F-1
D13	D-6
D14	D-1
D15	C-6
D16	B-6
D17	F-1
D18	B-6
D19	A-1
D20	C-1
D21	C-4
D22	D-1
D23	D-3

## VARIABLE RESISTOR

RV1	C-2
-----	-----

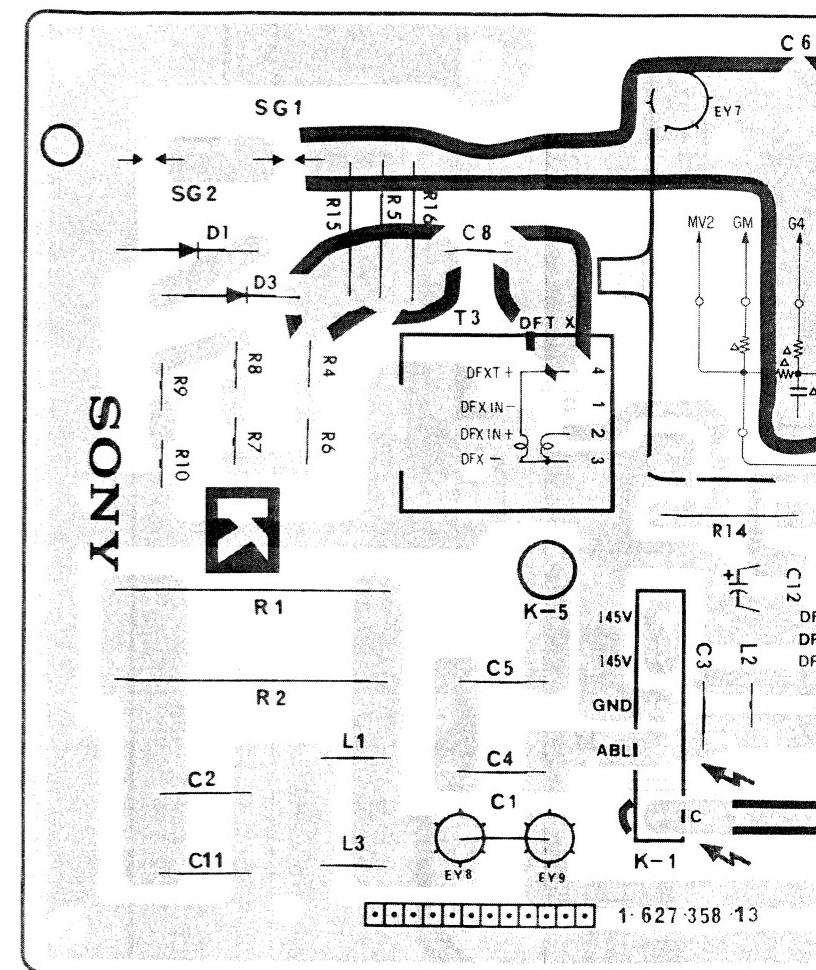
## TESTPOINT

TP1	E-2
TP2	C-3
TP3	A-2
TP4	F-2
TP5	D-2
TP6	E-1
TP7	D-3
TP8	E-3
TP9	F-9
TP10	F-2
TP11	F-2
TP12	D-2

**K**

## (FBT, DYNAMIC FOCUS)

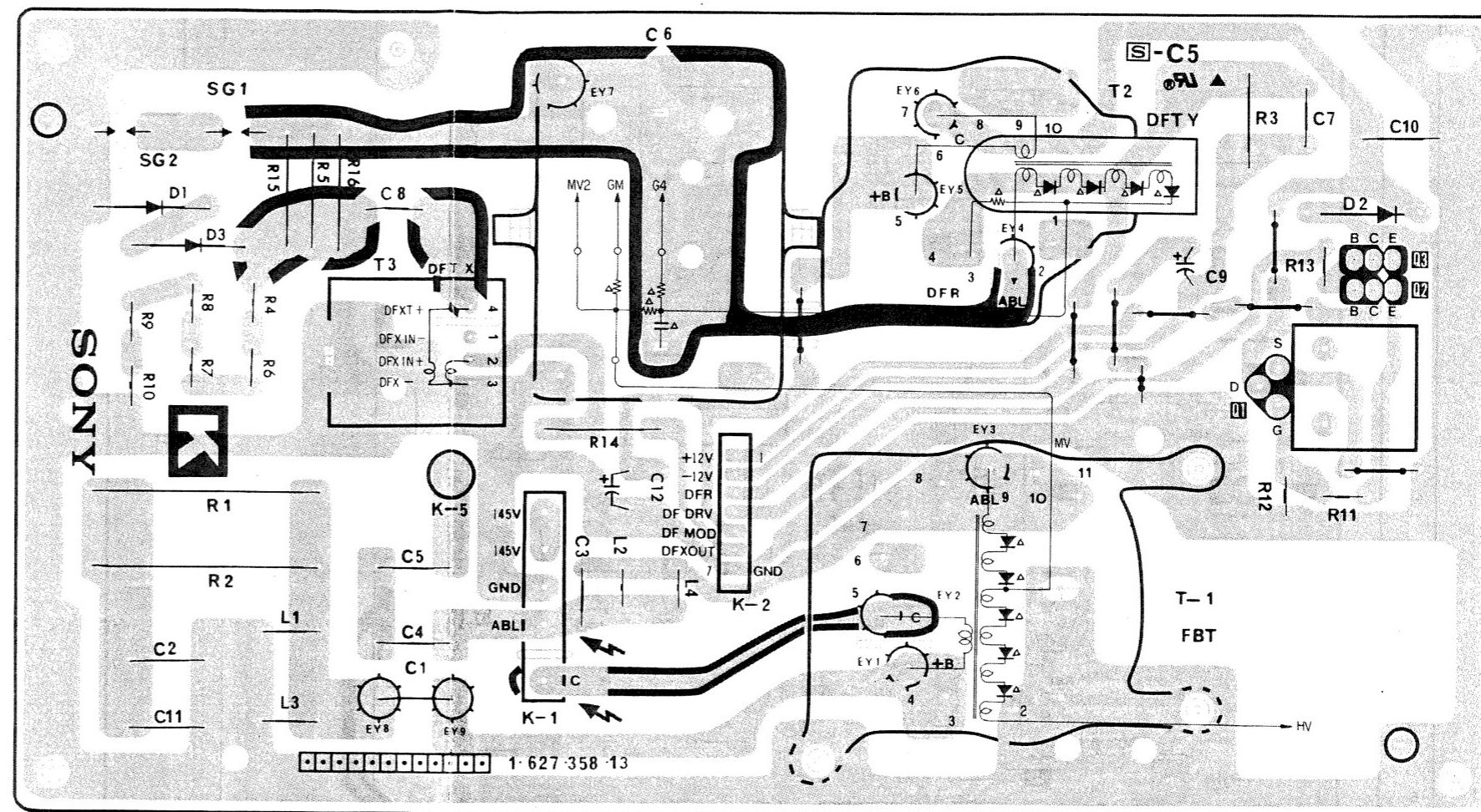
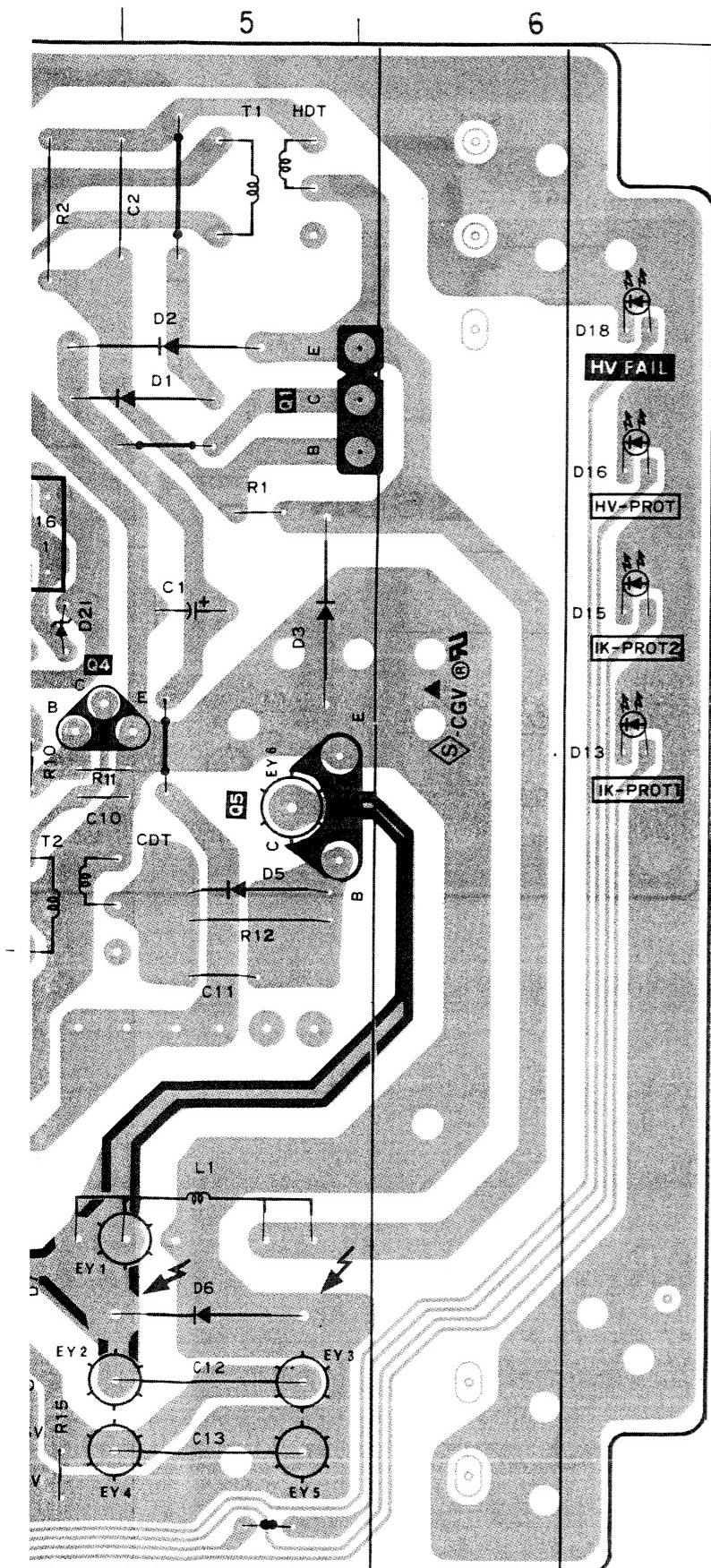
—K BOARD— (DDM-2801C; Serial No. 10,091 and higher) (DDM-2802C; Serial No. 10,001 and higher) (DDM-2801C2; Serial No. 10,001 and higher)



**K**

(FBT, DYNAMIC FOCUS)

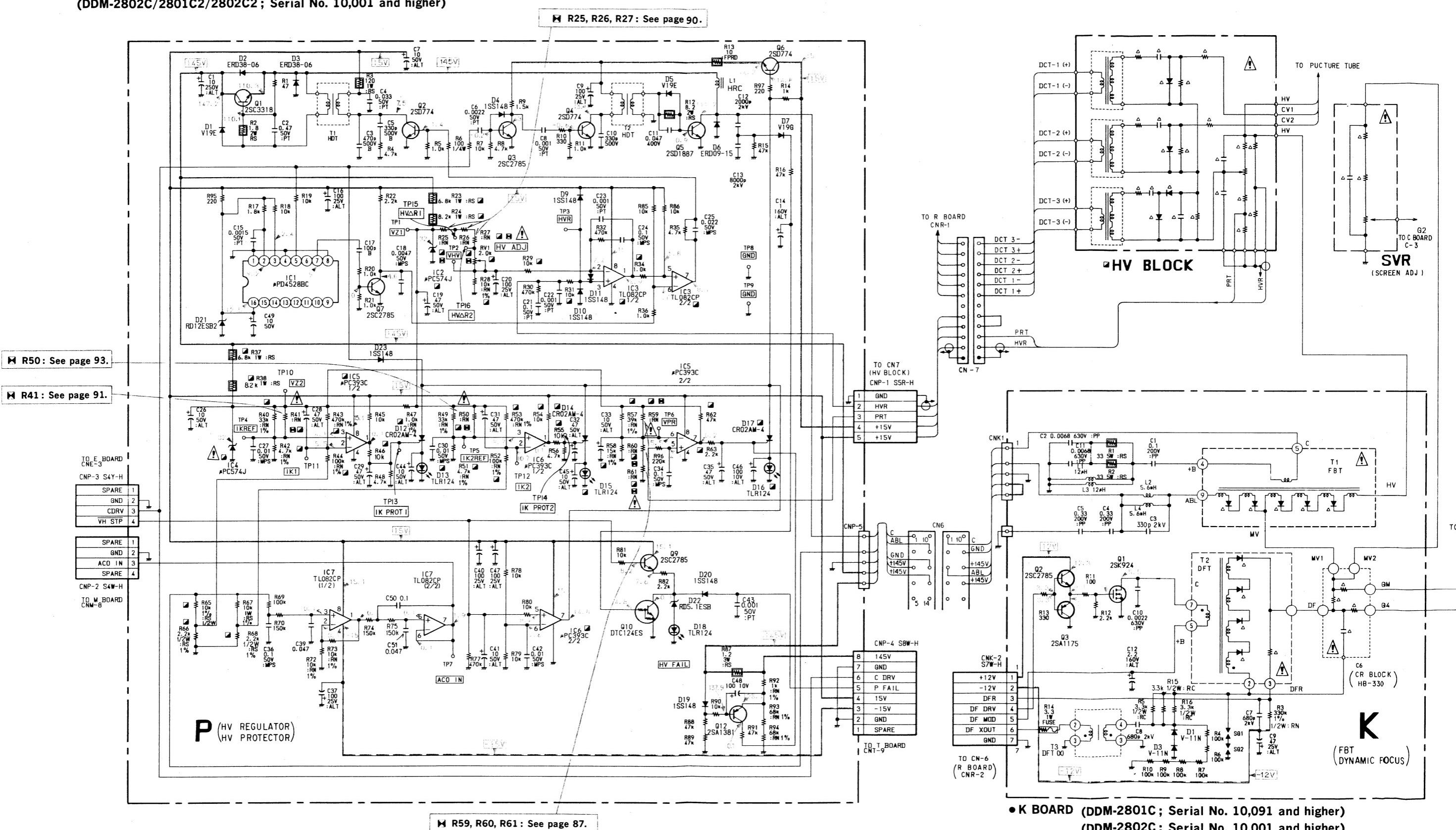
—K BOARD— (DDM-2801C; Serial No. 10,091 and higher) (DDM-2801C2; Serial No. 2,000,001 and higher)  
 (DDM-2802C; Serial No. 10,001 and higher) (DDM-2802C2; Serial No. 2,000,001 and higher)

**NOTE:**

The circuit indicated as left contains high voltage of over 600 Vp-p. Care must be paid to prevent an electric shock in inspection or repairing.

1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16

• P BOARD (DDM-2801C; Serial No. 10,021 and higher)  
(DDM-2802C/2801C2/2802C2; Serial No. 10,001 and higher)



• K BOARD (DDM-2801C; Serial No. 10,091 and higher)

(DDM-2802C; Serial No. 10,001 and higher)

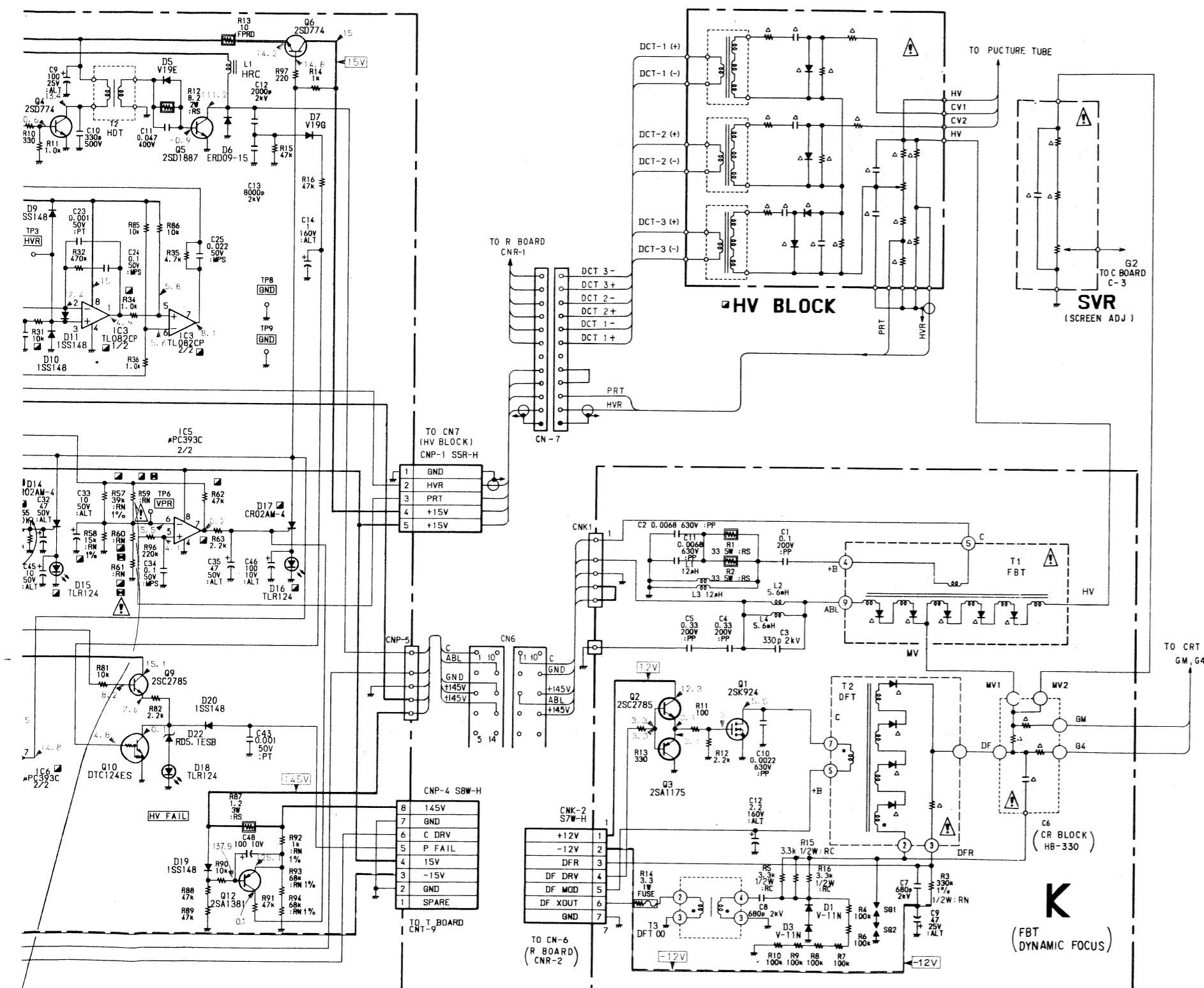
(DDM-2801C2; Serial No. 2,000,001 and higher)

(DDM-2802C2; Serial No. 2,000,001 and higher)

7 8 9 10 11 12 13 14 15 16 17 18 19 20

A  
B  
C  
D  
E  
F  
G  
H  
I  
J

R25, R26, R27 : See page 90.

**P Board**

IC1	MONO MULTI
2	32V ZENER DIODE
3	ERROR AMP
4	32V ZENER DIODE
5	HV PROTECT
6	IK PROTECT
7	IK AMP
Q1	HV CONTROL OUT
2	HV CONTROL DIRVE
3	HV PRE DRIVE
4	CONV DRIVE
5	CONV OUT
6	HV PROTECT OUT
7	HV SAW
9	VH STOP
10	HV STOP
12	CURRENT LIMIT
D1	HV DRIVE
2	HV OUT
3	HV OUT
4	SPEED UP
5	CONT DRIVE
6	DAMPER DIODE
7	HV RECT
9	PROTECT
10	PROTECT
11	PROTECT
12	IK PROT 1 OUT
13	IK PROT 1 LED
14	IK PROT 2 OUT
15	IK PROT 2 LED
16	HV PROT LED
17	HV PROT OUT
18	HV FAIL LED
19	BIAS
20	P FAIL
21	ZENER DIODE
22	BIAS
23	VH STOP

**K Board**

Q1	FOCUS OUT
2	BUFFER 1
3	BUFFER 2
D1	CLAMP 1
3	CLAMP 2

## Note:

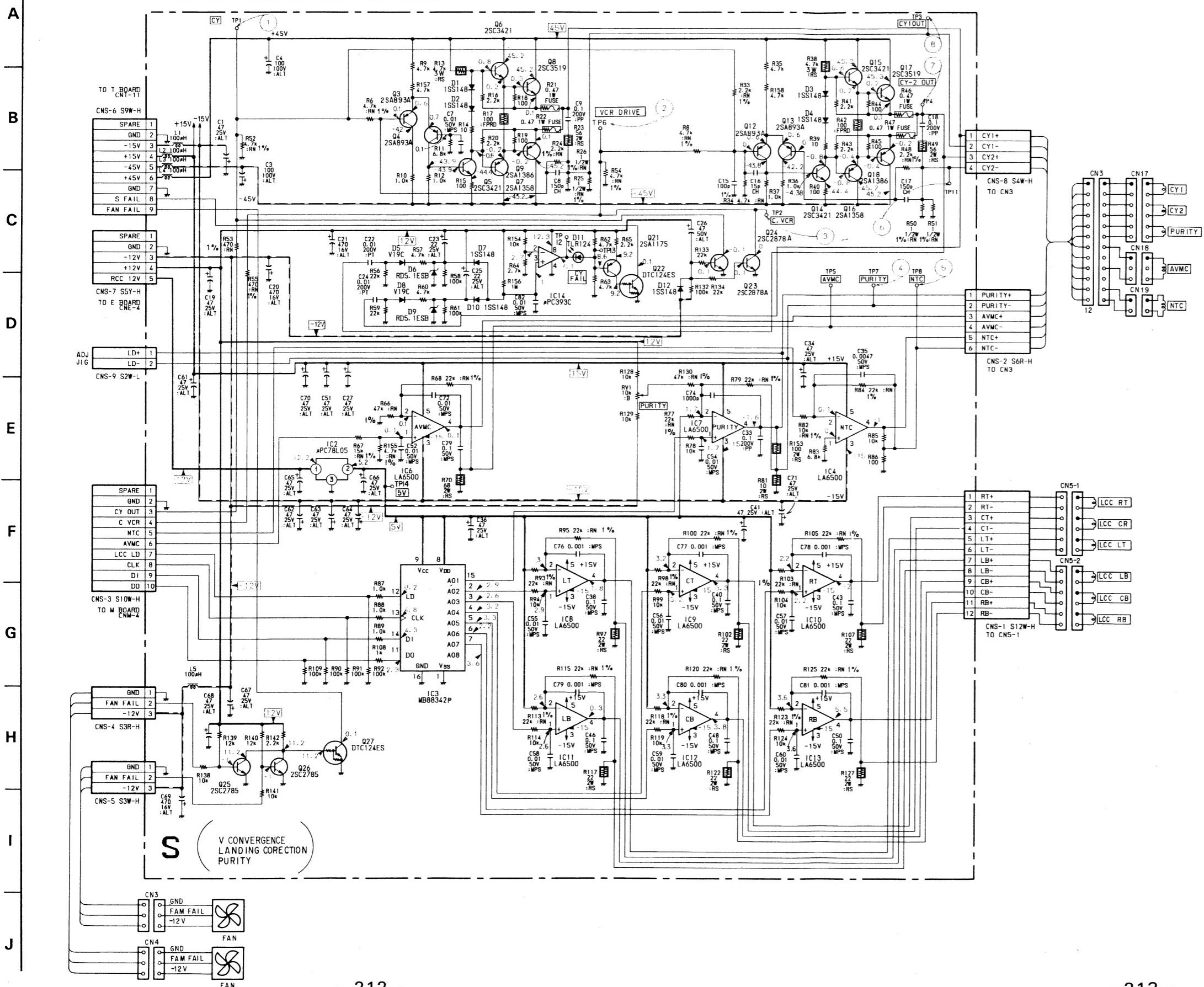
Note: The components identified by shading and mark are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par une trame et par une marque sont d'une importance critique pour la sécurité. Ne les remplacer que par des pièces de numéro spécifié.

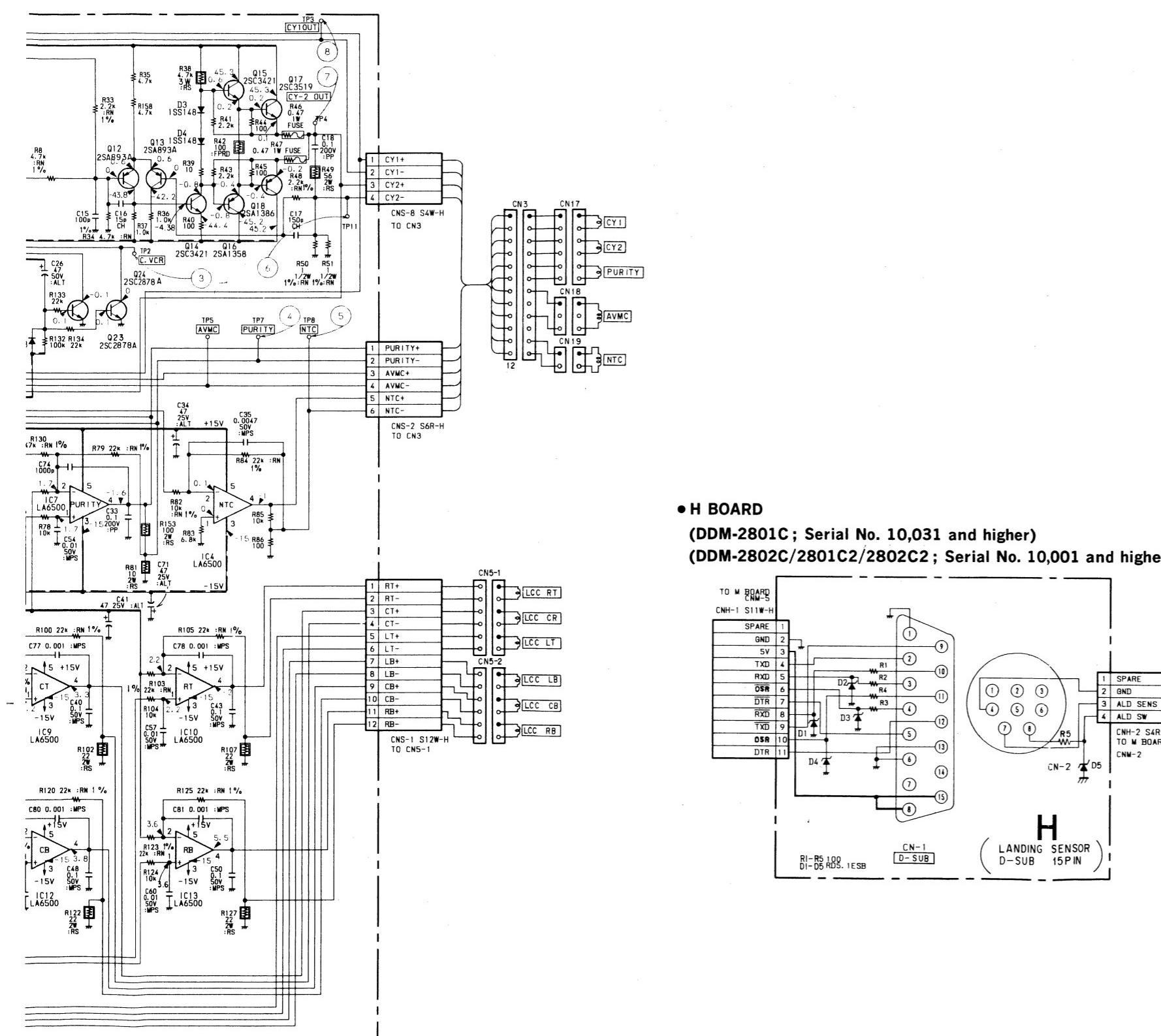
- The components identified by in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

• S BOARD (DDM-2801C; Serial No. 10,091 and higher) (DDM-2801C2/2802C2; Serial No. 2,000,001 and higher)  
(DDM-2802C; Serial No. 10,001 and higher)

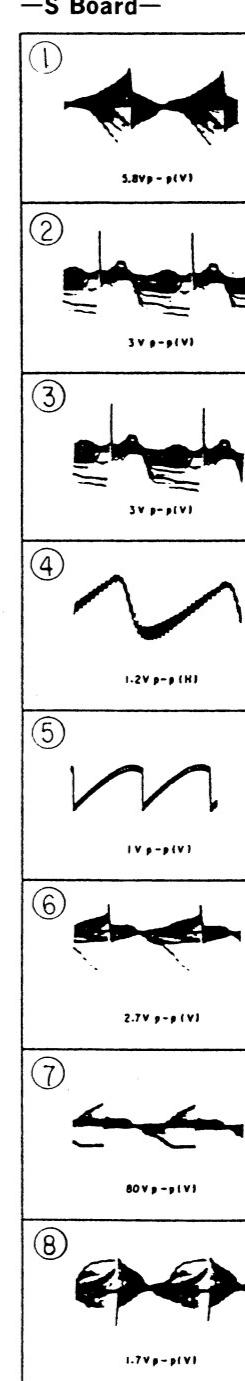


2.000.001 and higher)



- H BOARD  
(DDM-2801C; Serial No. 10,031 and higher)  
(DDM-2802C/2801C2/2802C2; Serial No. 10,001 and higher)

IC2	SV REG
3	DA CONV.
4	NTC OUT
6	AVMC OUT
7	PURITY OUT
8	LCC OUT 1
9	LCC OUT 2
10	LCC OUT 3
11	LCC OUT 4
12	LCC OUT 5
13	LCC OUT 6
14	FAIL COMP
Q3	CY PREAMP 1
4	CY PREAMP 2
5	CY DRIVE 1
6	CY DRIVE 2
7	CY DRIVE 3
8	CY OUT 1
9	CY OUT 2
12	CY PREAMP 3
13	CY PREAMP 4
14	CY DRIVE 4
15	CY DRIVE 5
16	CY DRIVE 6
17	CY OUT 3
18	CY OUT 4
21	CY FAIL 1
22	CY FAIL 2
23	CY MUTING 1
24	CY MUTING 2
25	FAN FAIL 1
26	FAN FAIL 2
27	FAN FAIL 3
D1	BIAS 1
2	BIAS 2
3	BIAS 3
4	BIAS 4
5	RECT 1
6	CLAMP 1
7	SW 1
8	RECT 2
9	CLAMP 2
10	SW 2
11	CY FAIL
12	CY MUTING



-H Board-

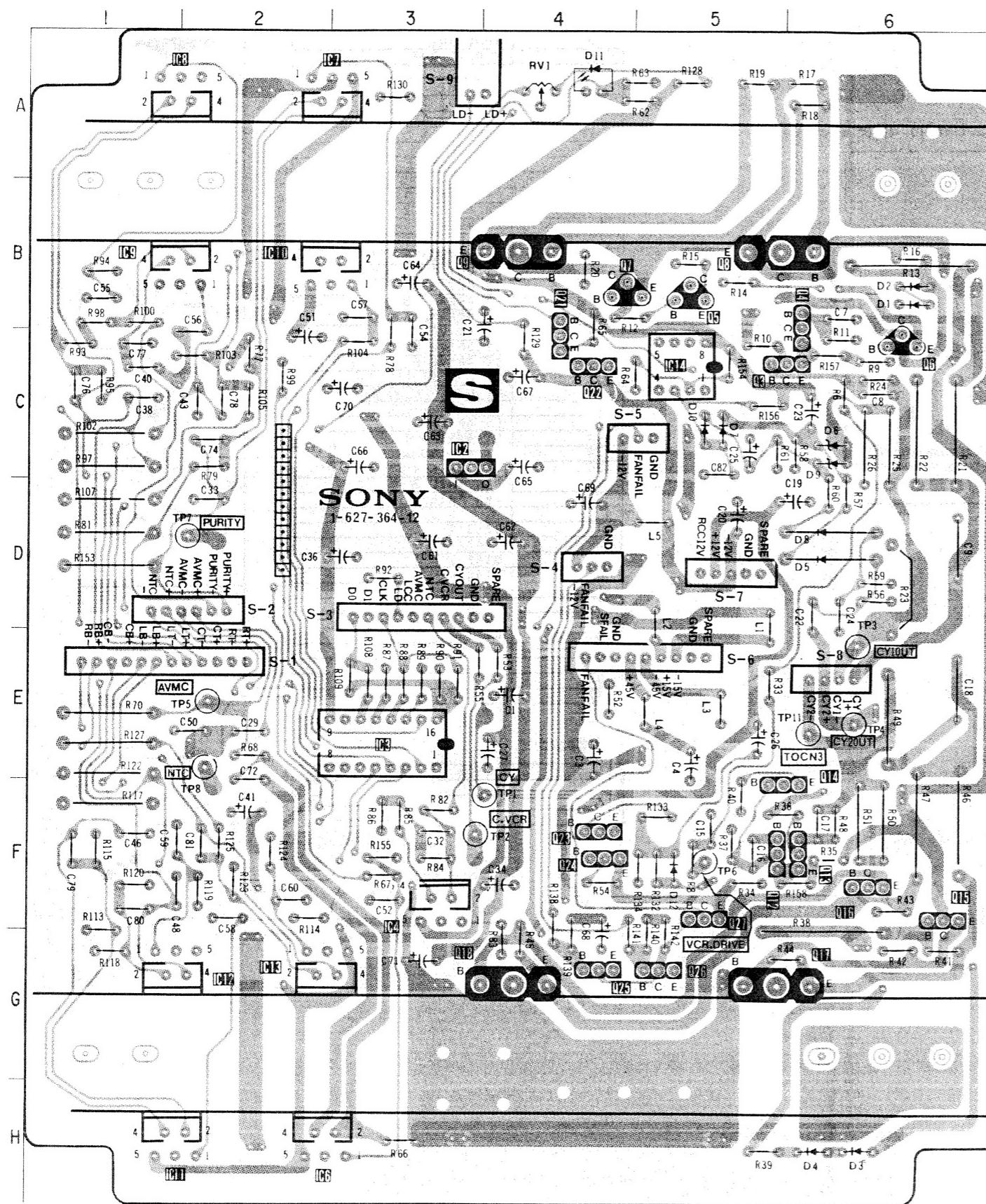
D 1	SLICE
2	SLICE
3	SLICE
4	SLICE
5	SLICE

**S**

(V.CONVERGENCE, V.CENT, LANDING CORRECTION, PURITY)

—S Board—

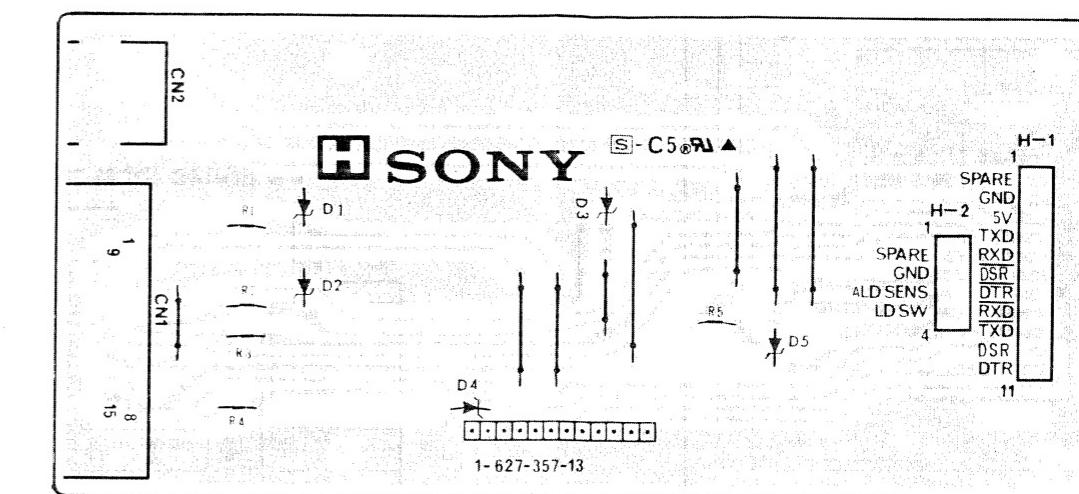
IC	
IC2	C-3
IC3	F-3
IC4	F-3
IC6	H-2
IC7	A-2
IC8	A-11
IC9	B-11
IC10	B-2
IC11	H-11
IC12	G-11
IC13	G-2
IC14	C-5
TRANSISTOR	
Q3	C-5
Q4	C-6
Q5	B-5
Q6	C-6
Q7	B-4
Q8	B-5
Q9	B-4
Q12	F-5
Q13	F-6
Q14	E-5
Q15	F-6
Q16	F-6
Q17	F-6
Q18	G-4
Q21	C-4
Q22	C-4
Q23	F-4
Q24	F-4
Q25	G-4
Q26	G-5
Q27	F-5
DIODE	
D1	B-6
D2	B-6
D3	H-6
D4	H-6
D5	D-6
D6	C-6
D7	C-5
D8	D-6
D9	C-6
D10	C-5
D11	A-4
D12	F-5
VARIABLE RESISTOR	
RV1	A-4
TESTPOINT	
TP1	F-4
TP2	F-3
TP3	F-5
TP4	E-6
TP5	E-2
TP7	D-2
TP8	E-2
TP11	E-6



**H**

(D-SUB 15 PIN, LANDING SENSOR)

—H BOARD— (DDM-2801C; Serial No. 10,031 and higher)  
(DDM-2802C/2801C2/2802C2; Serial No. 10,001 and higher)



■ : Pattern from the side which enables seeing

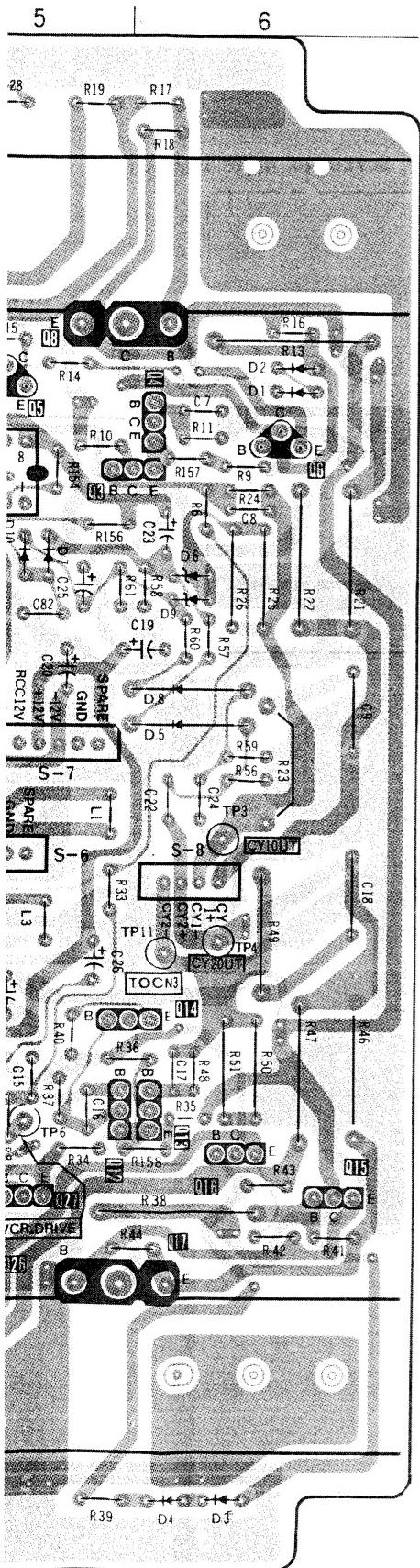
□ : Pattern of the rear side.

H

(D-SUB 15 PIN, LANDING SENSOR)

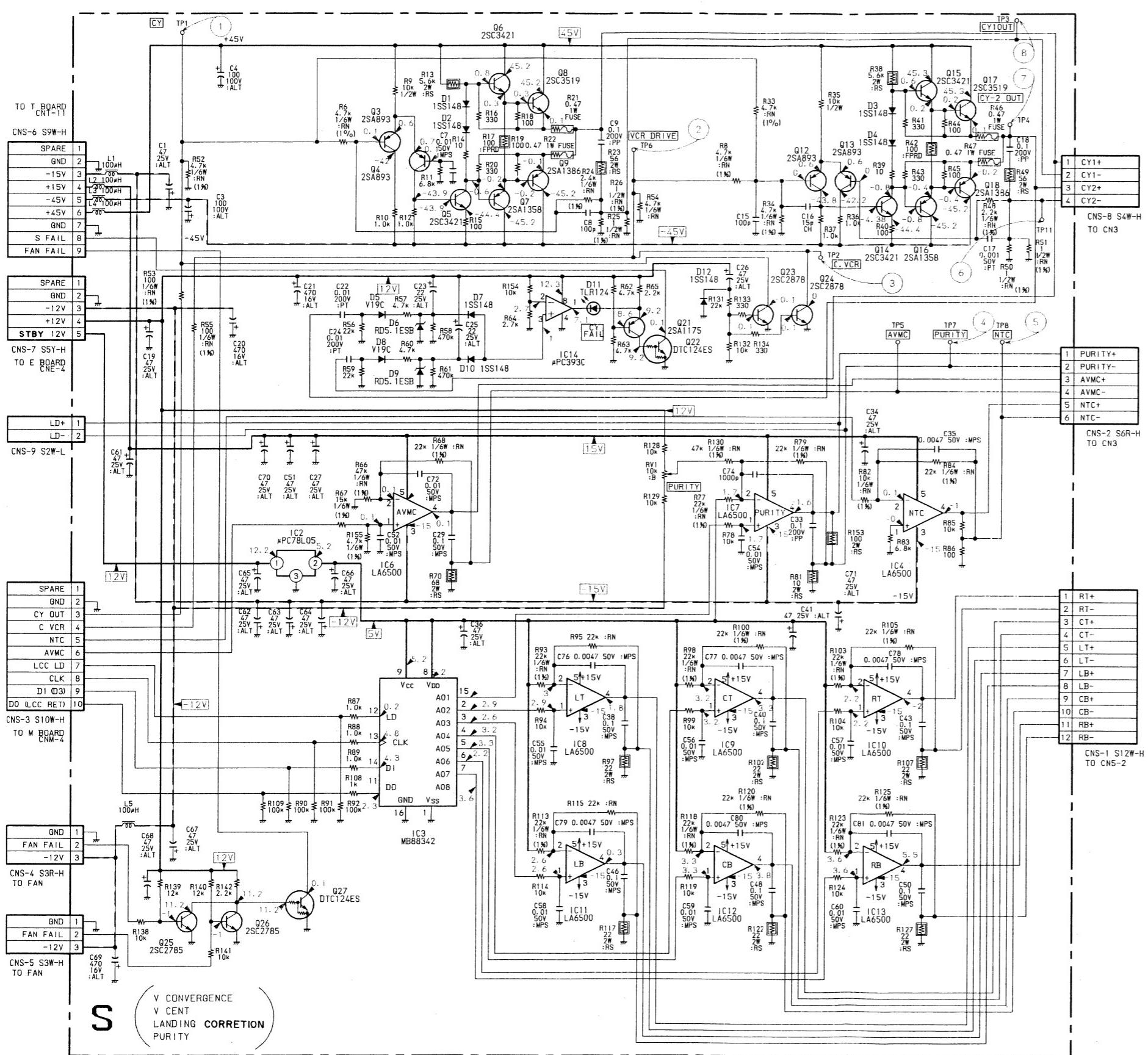
2C2; Serial No. 10,001 and higher)

—H BOARD— (DDM-2801C; Serial No. 10,031 and higher)  
(DDM-2802C/2801C2/2802C2; Serial No. 10,001 and higher)

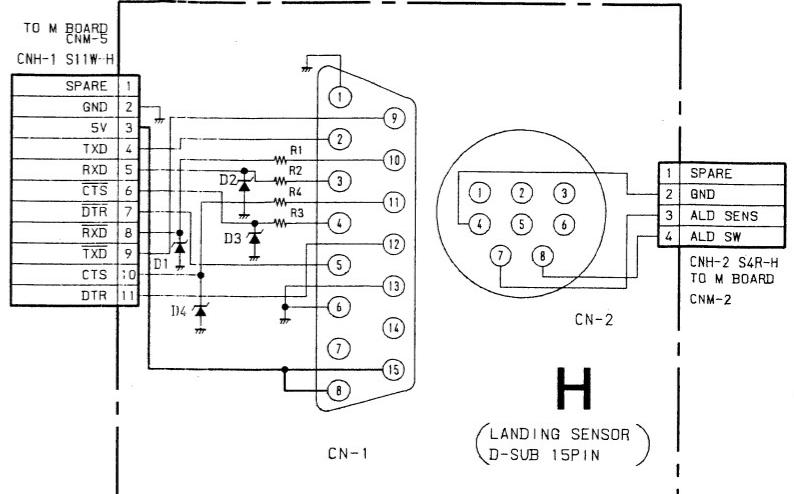


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

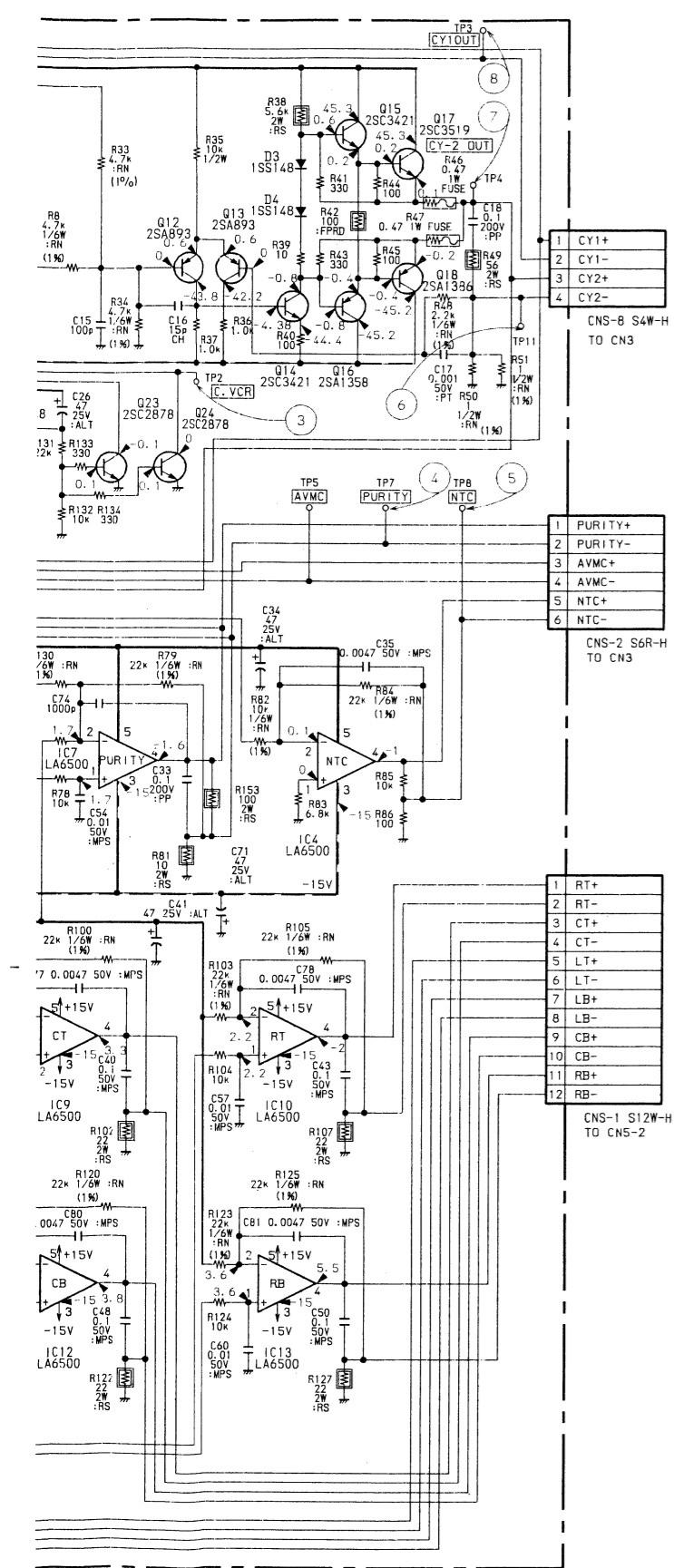
• S BOARD (DDM-2801C only, Serial No. up-to 10,090)



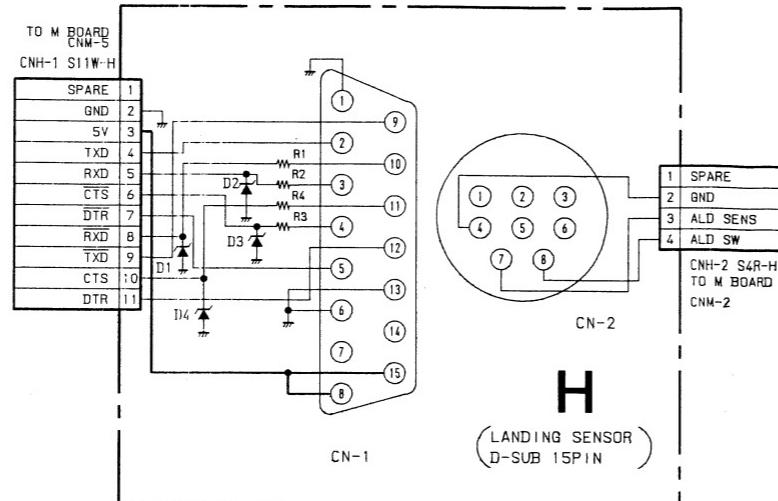
• H BOARD (DDM-2801C only, Serial No. up-to 10,030)



8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22



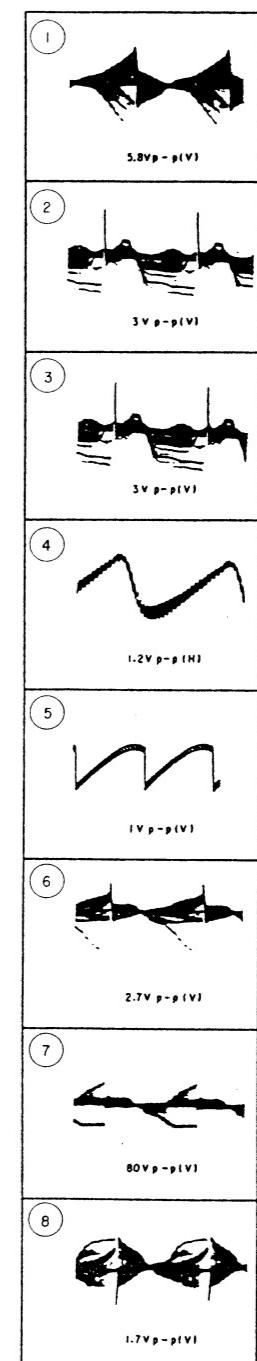
- H BOARD (DDM-2801C only, Serial No. up-to 10,030)



- S Board -

IC2	SV REG
3	DA CONV.
4	NTC OUT
6	AVMC OUT
7	PURITY OUT
8	LCC OUT 1
9	LCC OUT 2
10	LCC OUT 3
11	LCC OUT 4
12	LCC OUT 5
13	LCC OUT 6
14	FAIL COMP
Q3	CY PREAMP 1
4	CY PREAMP 2
5	CY DRIVE 1
6	CY DRIVE 2
7	CY DRIVE 3
8	CY OUT 1
9	CY OUT 2
12	CY PREAMP 3
13	CY PREAMP 4
14	CY DRIVE 4
15	CY DRIVE 5
16	CY DRIVE 6
17	CY OUT 3
18	CY OUT 4
21	CY FAIL 1
22	CY FAIL 2
23	CY MUTING 1
24	CY MUTING 2
25	FAN FAIL 1
26	FAN FAIL 2
27	FAN FAIL 3
D1	BIAS 1
2	BIAS 2
3	BIAS 3
4	BIAS 4
5	RECT 1
6	CLAMP 1
7	SW 1
8	RECT 2
9	CLAMP 2
10	SW 2
11	CY FAIL
12	CY MUTING

—S Board—



—H Board—

D1	SLICE
2	SLICE
3	SLICE
4	SLICE

S

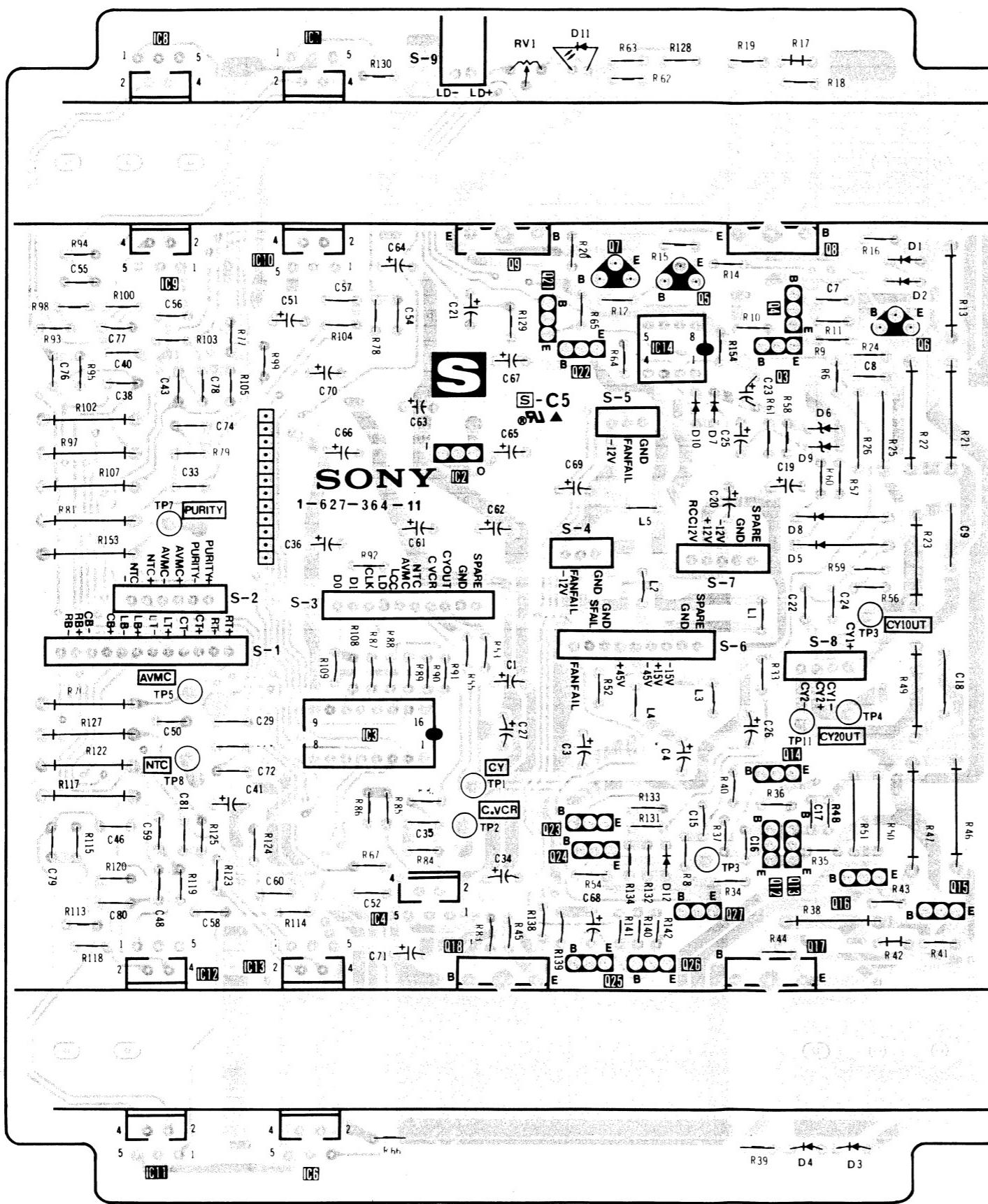
(V.CONVERGENCE, V.CENT, LANDING CORRECTION, PURITY)

S

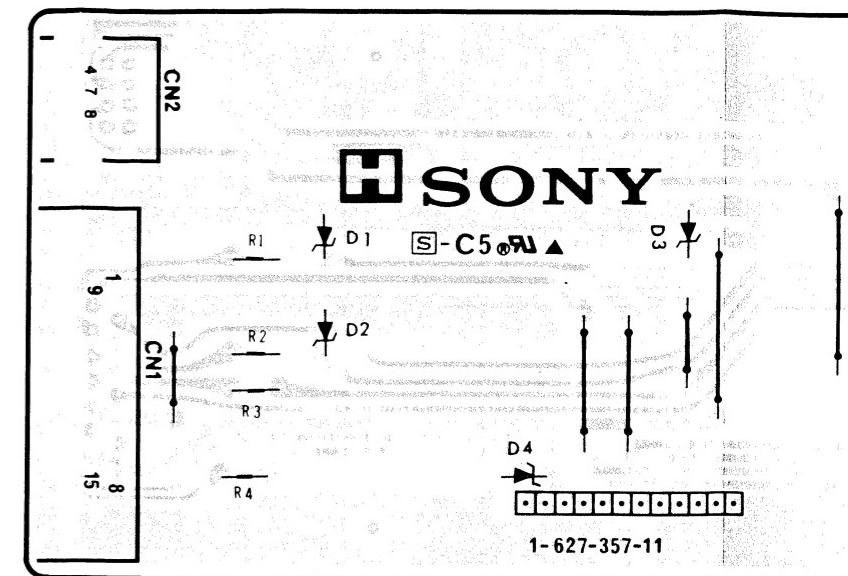
H

-S BOARD- (DDM-2801C only, Serial No. up-to 10,090)

I C	Q	D	R V	T P
		II	I	
8 7				
9,10	9 8	I		
7,5	2			
21 4	6			
22 3				
10,7	6			
9				
8 5	7			
3				
5 4	11			
8 1	2			
23				
24,12,13	12			
4	3			
16				
27 15				
12,13	8,25,26,17			
11 6	4,3			



-H BOARD- (DDM-2801C only, Serial No. up-to 10,030)

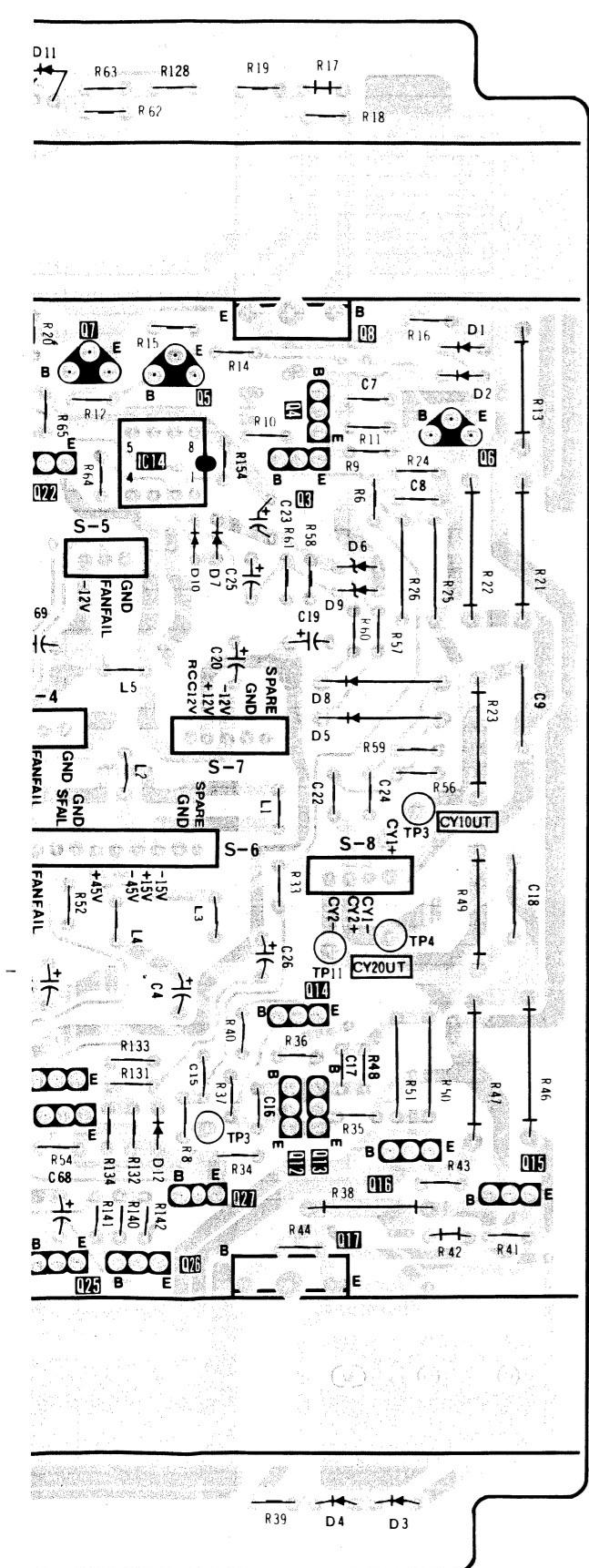


• : Pattern from the side which enables seeing  
• : Pattern of the rear side.

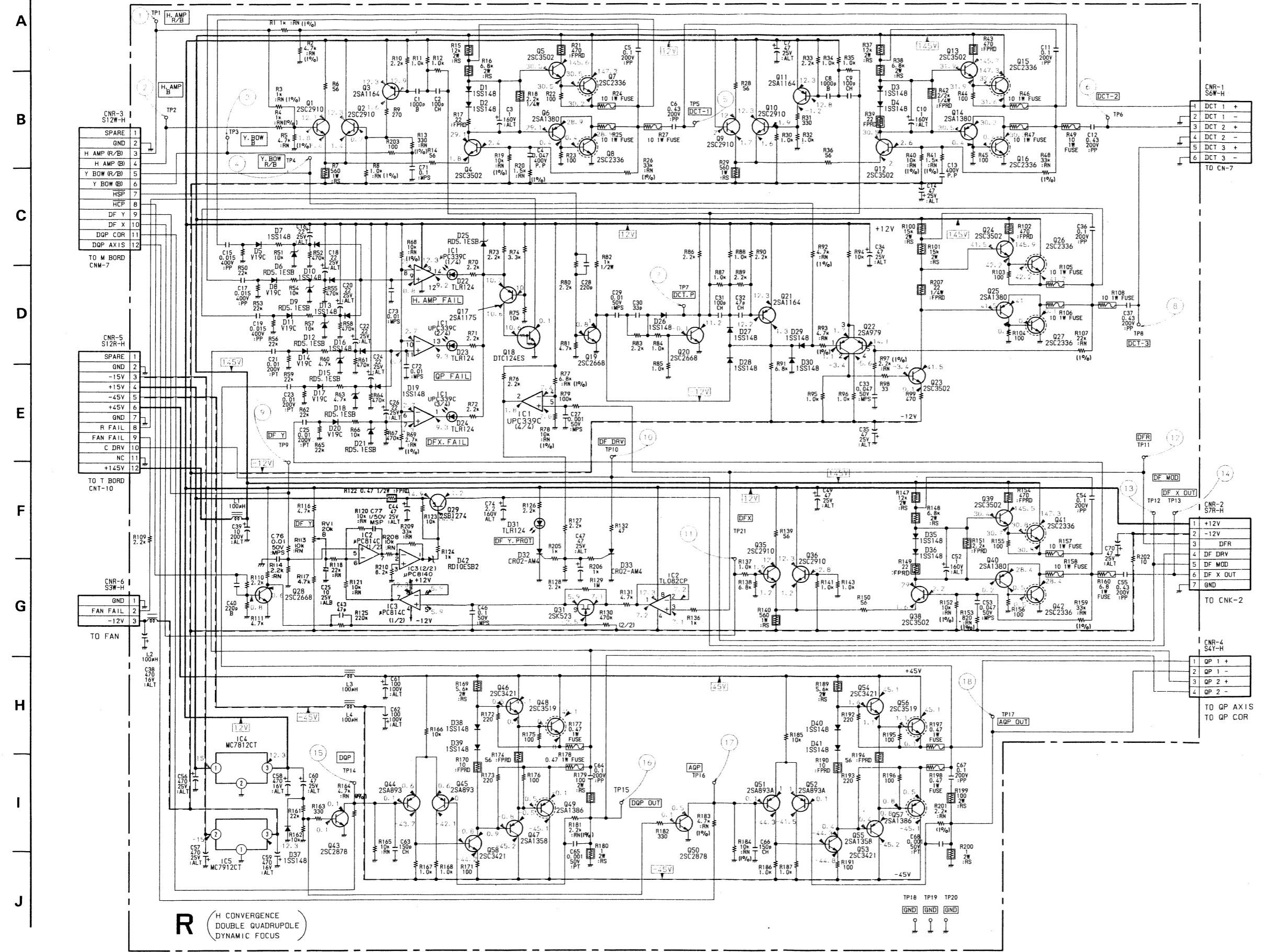
**S****H**

(D-SUB 15 PIN, LANDING SENSOR)

## —H BOARD— (DDM-2801C only, Serial No. up-to 10,030)

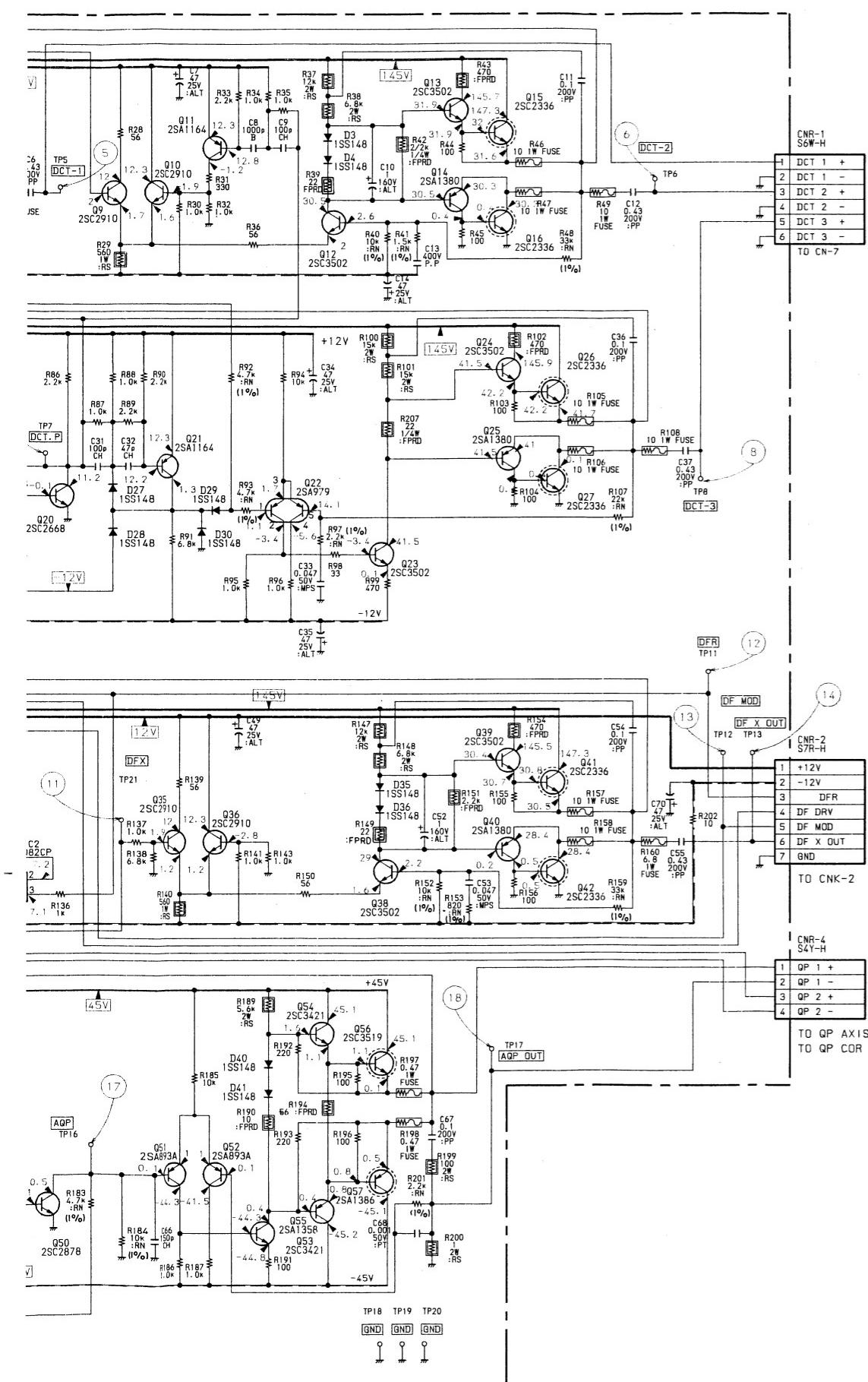


• R BOARD (DDM-2801C only. Serial No. up-to 10,090)

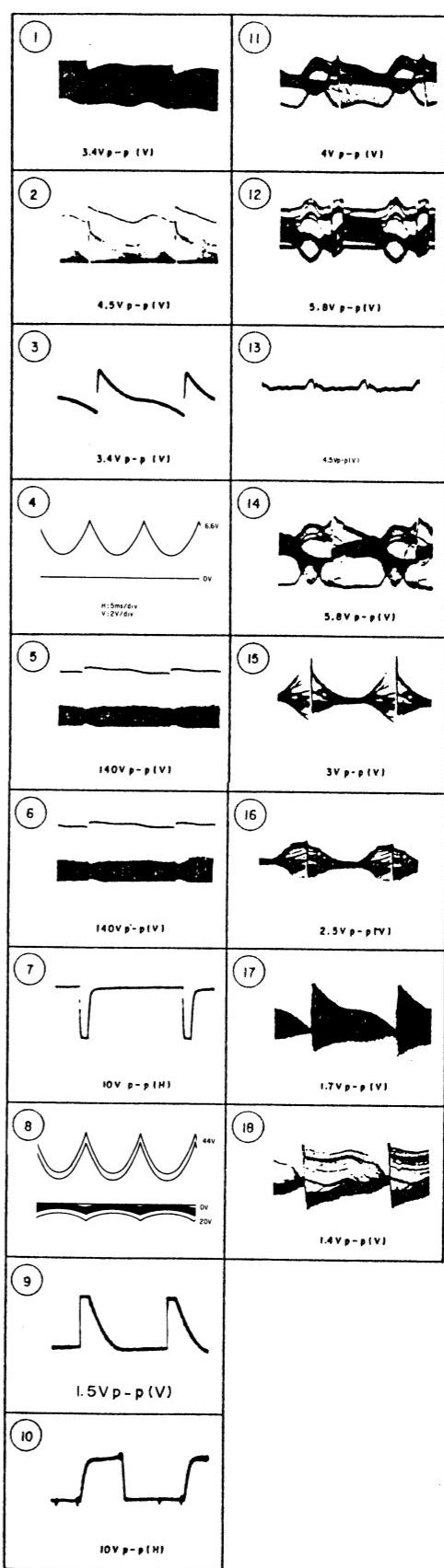


R Board-	
IC1	FAIL COMP
2	DFY MODU
3	DFY BUFF
4	12V REG
5	-12V REG
Q1	DCT PREAMP 1
2	DCT PREAMP 2
3	DCT PULSE 1
4	DCT DRIVE 1
5	DCT DRIVE 2
6	DCT DRIVE 3
7	DCT OUT 1
8	DCT OUT 2
9	DCT PREAMP 3
10	DCT PREAMP 4
11	DCT PULSE 2
12	DCT DRIVE 4
13	DCT DRIVE 5
14	DCT DRIVE 6
15	DCT OUT 3
16	DCT OUT 4
17	R FAIL 1
18	R FAIL 2
19	DCT PULSE 3
20	DCT PULSE 4
21	DCT PULSE 5
22	DCT PREAMP 4
23	DCT DRIVE 7
24	DCT DRIVE 8
25	DCT DRIVE 9
26	DCT OUT 5
27	DCT OUT 6
28	H.CENTER PULSE
29	DFY OUT
31	SAMPLE HOLD
35	DFX PREAMP 1
36	DFX PREAMP 2
38	DFX DRIVE 1
39	DFX DRIVE 2
40	DFX DRIVE 3
41	DFX OUT 1
42	DFX OUT 2
43	DQP MUTING
44	DQP PREAMP 1
45	DQP PREAMP 2
46	DQP DRIVE 1
47	DQP DRIVE 2
48	DQP OUT 1
49	DQP OUT 2
50	DQP MUTING
51	AQP PREAMP 1
52	AQP PREAMP 2
53	AQP DRIVE 1
54	AQP DRIVE 2
55	AQP DRIVE 3
56	AQP OUT 1
57	AQP OUT 2
58	DQP DRIVE 3

8 9 10 11 12 13 14 15 16 17 18 19 20 21 22

**R Board**

1C1	FAIL COMP
2	DFY MODU
3	DFY BUFF
4	12V REG
5	-12V REG
Q1	DCT PREAMP 1
2	DCT PREAMP 2
3	DCT PULSE 1
4	DCT DRIVE 1
5	DCT DRIVE 2
6	DCT DRIVE 3
7	DCT OUT 1
8	DCT OUT 2
9	DCT PREAMP 3
10	DCT PREAMP 4
11	DCT PULSE 2
12	DCT DRIVE 4
13	DCT DRIVE 5
14	DCT DRIVE 6
15	DCT OUT 3
16	DCT OUT 4
17	R FAIL 1
18	R FAIL 2
19	DCT PULSE 3
20	DCT PULSE 4
21	DCT PULSE 5
22	DCT PREAMP 4
23	DCT DRIVE 7
24	DCT DRIVE 8
25	DCT DRIVE 9
26	DCT OUT 5
27	DCT OUT 6
28	H CENTER PULSE
29	DFY OUT
31	SAMPLE HOLD
35	DFX PREAMP 1
36	DFX PREAMP 2
38	DFX DRIVE 1
39	DFX DRIVE 2
40	DFX DRIVE 3
41	DFX OUT 1
42	DFX OUT 2
43	DQP MUTING
44	DQP PREAMP 1
45	DQP PREAMP 2
46	DQP DRIVE 1
47	DQP DRIVE 2
48	DQP OUT 1
49	DQP OUT 2
50	DQP MUTING
51	AQP PREAMP 1
52	AQP PREAMP 2
53	AQP DRIVE 1
54	AQP DRIVE 2
55	AQP DRIVE 3
56	AQP OUT 1
57	AQP OUT 2
58	DQP DRIVE 3

**R Board**

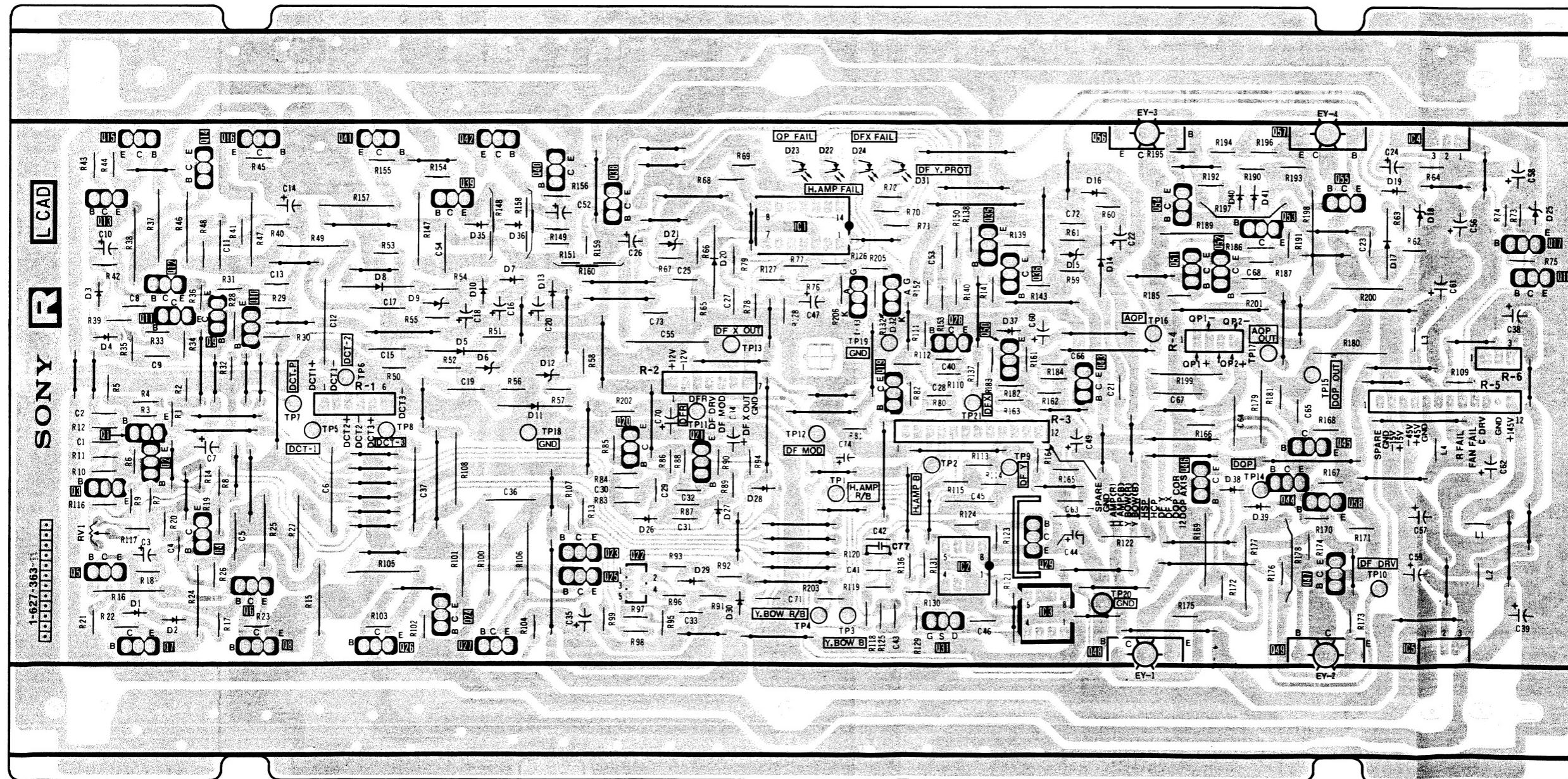
R

#### (H.CONVERGENCE, DUBLE QUADRUPOLE, DYNAMIC FOCUS)

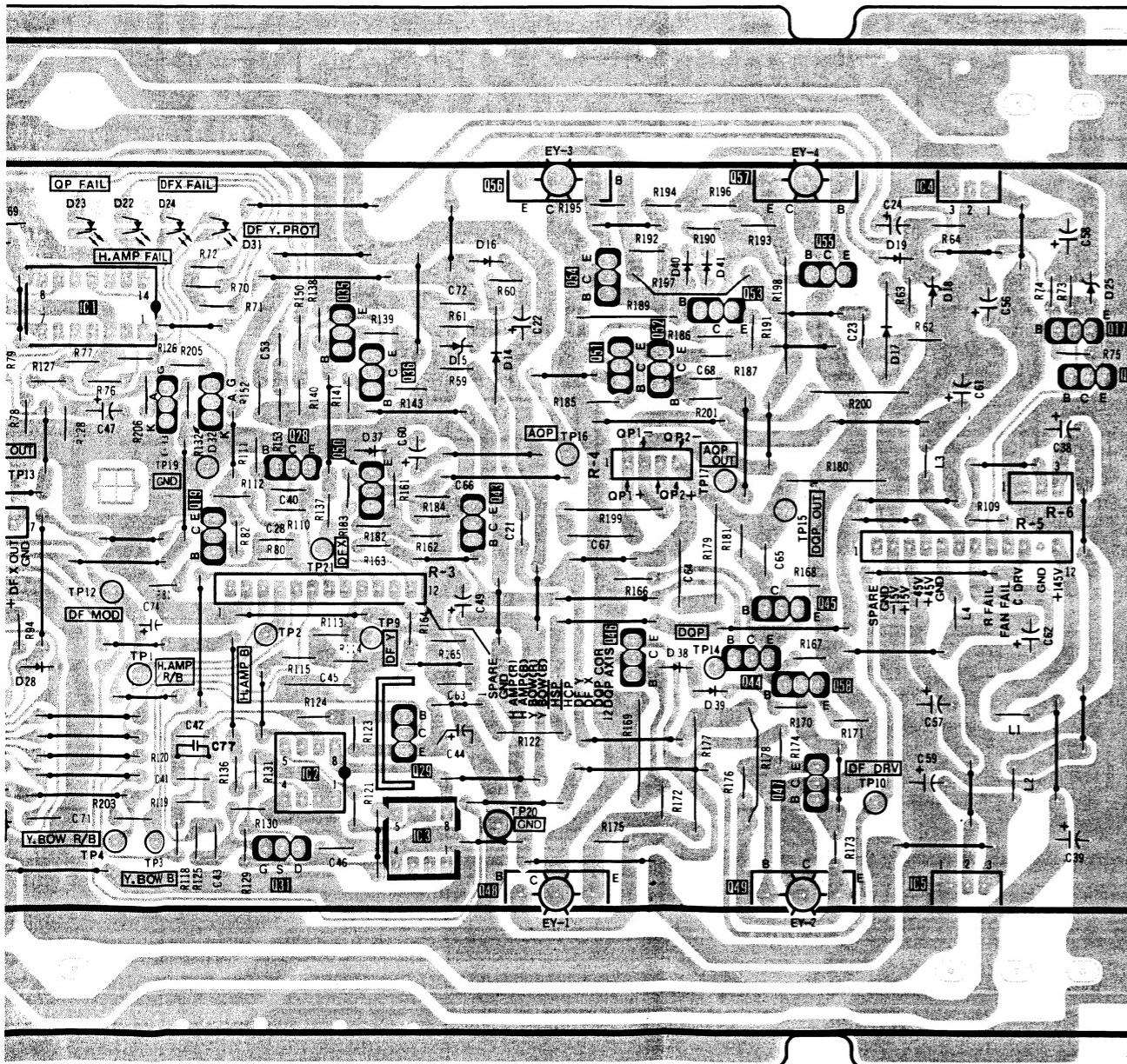
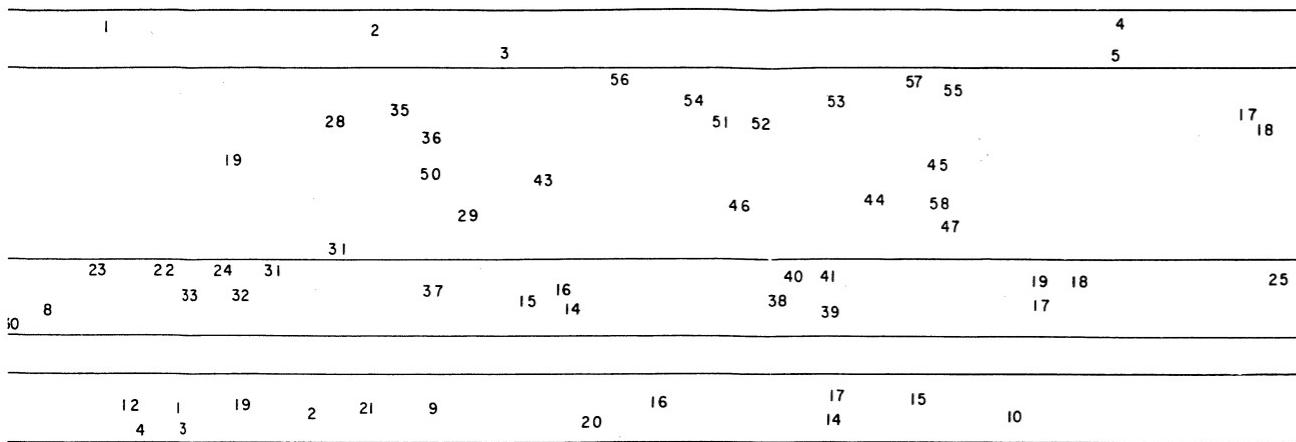
R

**—R BOARD— (DDM-2801C only; Serial No. up-to 10,090)**

IC					1		2		3		4		
											5		
	13	15	14	16	41	39	42	40	38		56	57	55
Q		12	11	9	10					28	35	54	53
	1	2	4	6	8	24	23	25	22		36	51	52
	3	5				26	27		21	19	50	43	45
	7									29	46	44	58
D	3	4			8	9	35	36		31	23	22	40
	1	2				5	10	7	13		33	32	41
RV						6	6	11	12	37	15	16	19
TP					7	5	6	8	18	11	13	12	17
										4	3	14	15
										20	16	10	



P



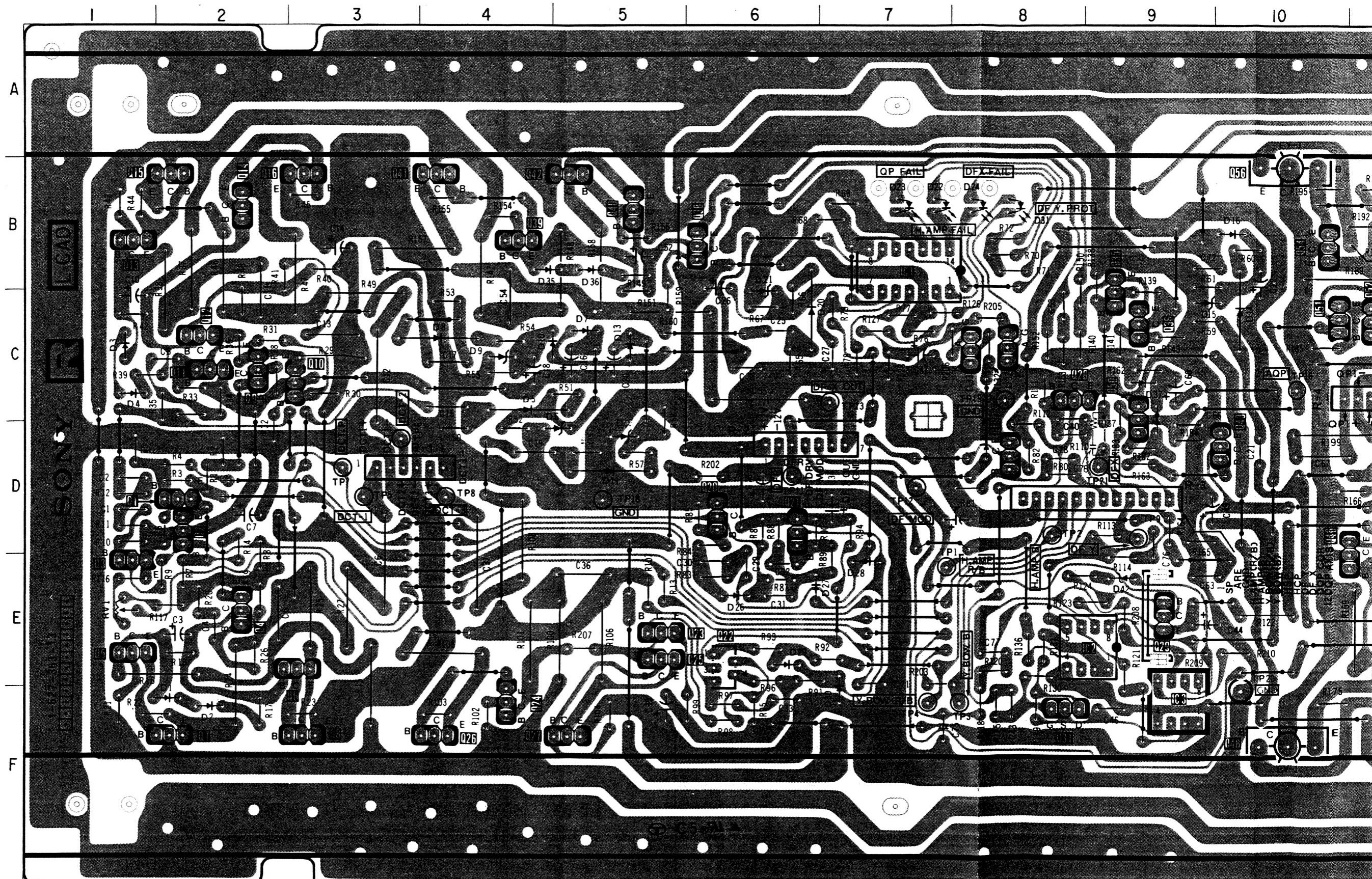
R

(H.CONVERGENCE, DUBLE QUADRUPOLE, DYNAMIC FOCUS)

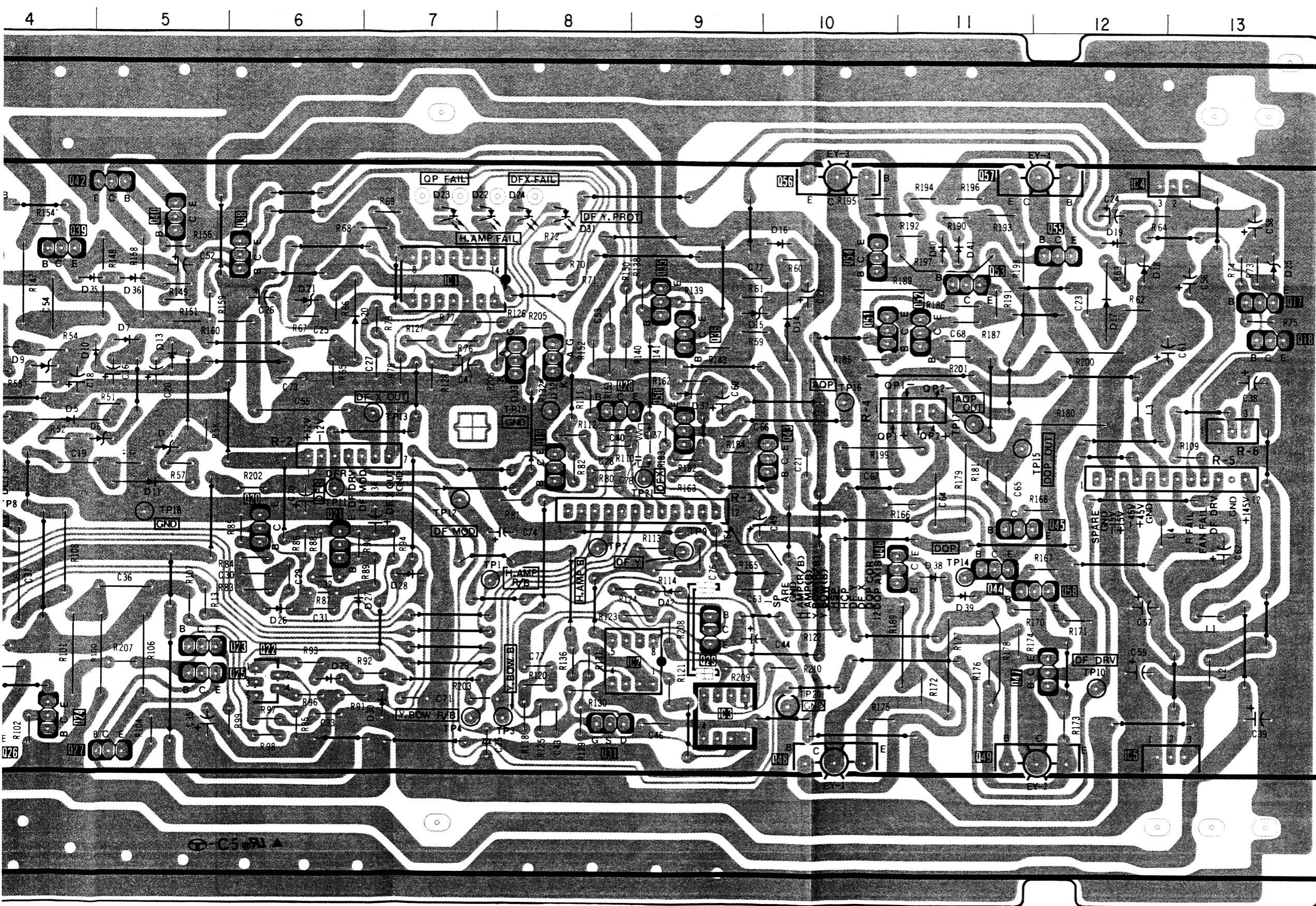
—R BOARD— (DDM-2801C ; Serial No. 10,091—2,000,043)

—R Board—

IC	D20	C-6
	D21	B-6
	D22	B-7
	D23	B-7
	D24	B-8
	D25	B-13
	D26	E-6
	D27	E-6
	D28	E-7
	D29	E-6
	D30	F-7
	D31	B-8
	D32	C-8
	D33	C-8
	D34	B-4
	D35	E-1
	D36	B-5
	D37	C-9
	D38	E-11
	D39	E-11
	D40	B-11
	D41	B-11
	D42	E-9
TRANSISTOR		
Q1	D-2	
Q2	D-2	
Q3	E-1	
Q4	E-2	
Q5	E-1	
Q6	E-3	
Q7	F-2	
Q8	F-3	
Q9	C-2	
Q10	C-3	
Q11	C-2	
Q12	C-2	
Q13	B-1	
Q14	B-2	
Q15	B-2	
Q16	B-6	
Q17	B-13	
Q18	C-13	
Q19	D-8	
Q20	D-6	
Q21	D-6	
Q22	E-6	
Q23	E-5	
Q24	F-4	
Q25	E-5	
Q26	F-4	
Q27	F-5	
Q28	C-8	
Q29	E-9	
Q30	F-8	
Q31	F-8	
Q32	E-12	
Q33	D-7	
Q34	D-7	
Q35	C-9	
Q36	B-6	
Q37	C-7	
Q38	E-11	
Q39	B-4	
Q40	B-5	
Q41	B-4	
Q42	B-5	
Q43	D-9	
Q44	D-11	
Q45	D-11	
Q46	D-10	
Q47	E-12	
Q48	F-10	
Q49	F-11	
Q50	C-9	
Q51	C-10	
Q52	C-11	
Q53	B-11	
Q54	B-10	
Q55	B-12	
Q56	B-10	
Q57	B-11	
Q58	E-11	
TESTPOINT		
TP1	E-7	
TP2	D-8	
TP3	F-8	
TP4	F-7	
TP5	D-3	
TP6	D-3	
TP7	D-3	
TP8	D-4	
TP9	D-9	
TP10	E-12	
TP11	D-6	
TP12	D-7	
TP13	C-7	
TP14	E-11	
TP15	D-11	
TP16	C-10	
TP17	C-11	
TP18	D-5	
TP19	C-9	
TP20	E-10	
TP21	D-9	
DIODE		
D1	F-2	
D2	F-2	
D3	C-1	
D4	C-1	
D5	C-4	
D6	D-4	
D7	C-5	
D8	C-4	
D9	C-4	
D10	C-4	
D11	D-5	
D12	D-5	
D13	C-5	
D14	C-10	
D15	C-9	
D16	B-10	
D17	C-12	
D18	B-12	
D19	B-12	

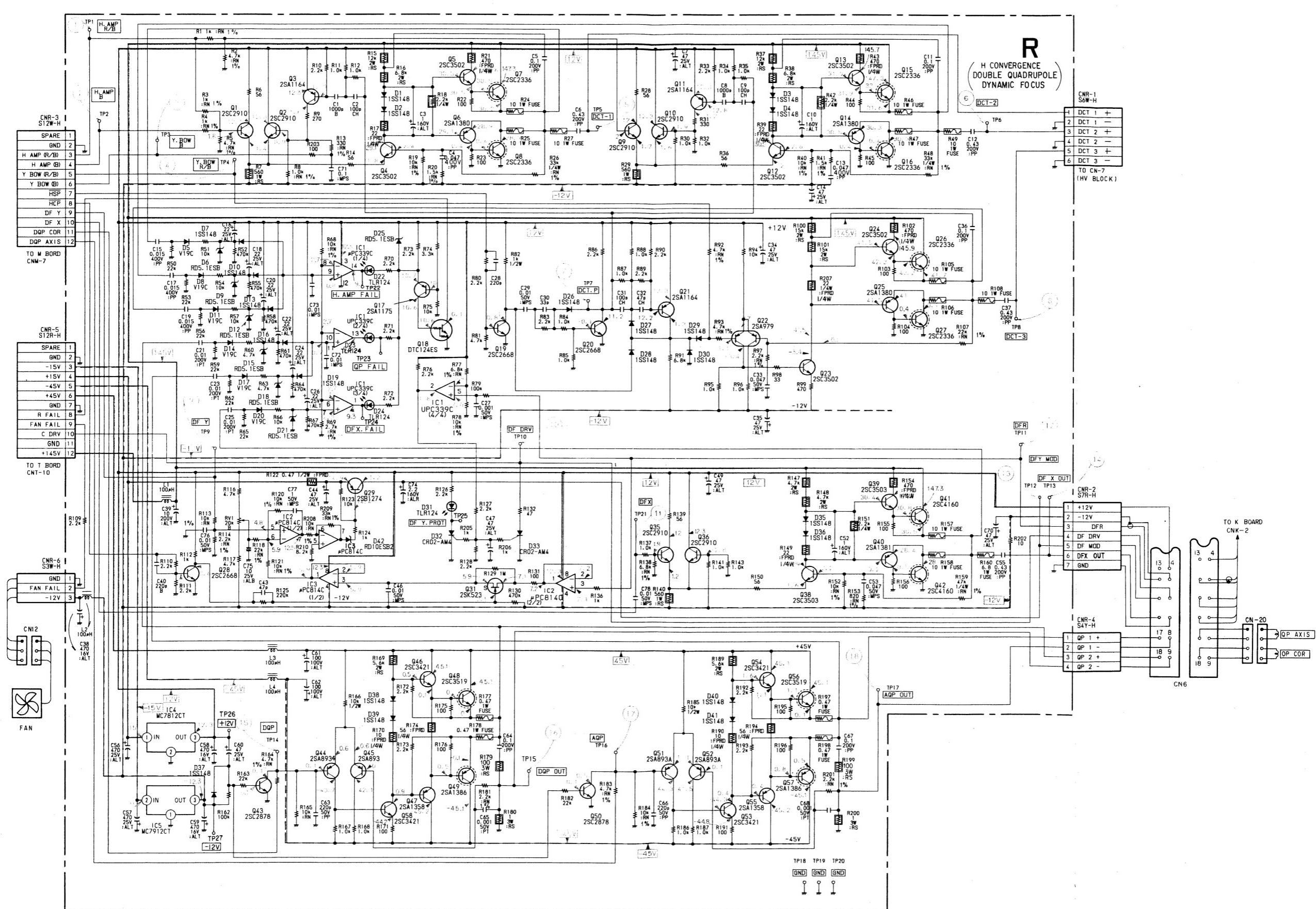


R



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

• R BOARD (DDM-2801C only; Serial No. 10,090—2,000,043)

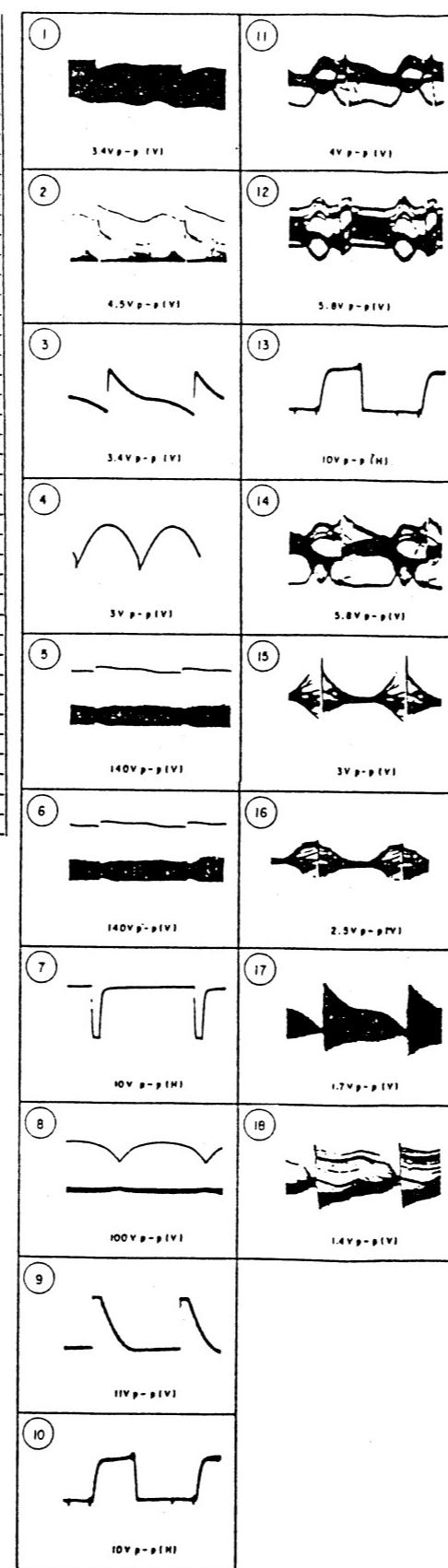


I C 1	2
	3
	4
	5
Q 1	6
2	7
3	8
4	9
5	10
6	11
7	12
8	13
9	14
10	15
11	16
12	17
13	18
14	19
15	20
16	21
17	22
18	23
19	24
20	25
21	26
22	27
23	28
24	29
25	30
26	31
27	32
28	33
29	34
30	35
31	36
32	37
33	38
34	39
35	40
36	41
37	42
38	43
39	44
40	45
41	46
42	47
43	48
44	49
45	50
46	51
47	52
48	53
49	54
50	55
51	56
52	57
53	58

## —R Board—

IC1	FAIL COMP
2	DFY MODU
3	DFY BUFF
4	12V REG
5	-12V REG
Q1	DCT PREAMP 1
2	DCT PREAMP 2
3	DCT PULSE 1
4	DCT DRIVE 1
5	DCT DRIVE 2
6	DCT DRIVE 3
7	DCT OUT 1
8	DCT OUT 2
9	DCT PREAMP 3
10	DCT PREAMP 4
11	DCT PULSE 2
12	DCT DRIVE 4
13	DCT DRIVE 5
14	DCT DRIVE 6
15	DCT OUT 3
16	DCT OUT 4
17	R FAIL 1
18	R FAIL 2
19	DCT PULSE 3
20	DCT PULSE 4
21	DCT PULSE 5
22	DCT PREAMP 4
23	DCT DRIVE 7
24	DCT DRIVE 8
25	DCT DRIVE 9
26	DCT OUT 5
27	DCT OUT 6
28	H.CENTER PULSE
29	DFY OUT
31	SAMPLE HOLD
35	DFX PREAMP 1
36	DFX PREAMP 2
38	DFX DRIVE 1
39	DFX DRIVE 2
40	DFX DRIVE 3
41	DFX OUT 1
42	DFX OUT 2
43	DQP MUTING
44	DQP PREAMP 1
45	DQP PREAMP 2
46	DQP DRIVE 1
47	DQP DRIVE 2
48	DQP OUT 1
49	DQP OUT 2
50	DQP MUTING
51	AQP PREAMP 1
52	AQP PREAMP 2
53	AQP DRIVE 1
54	AQP DRIVE 2
55	AQP DRIVE 3
56	AQP OUT 1
57	AQP OUT 2
58	DQP DRIVE 3

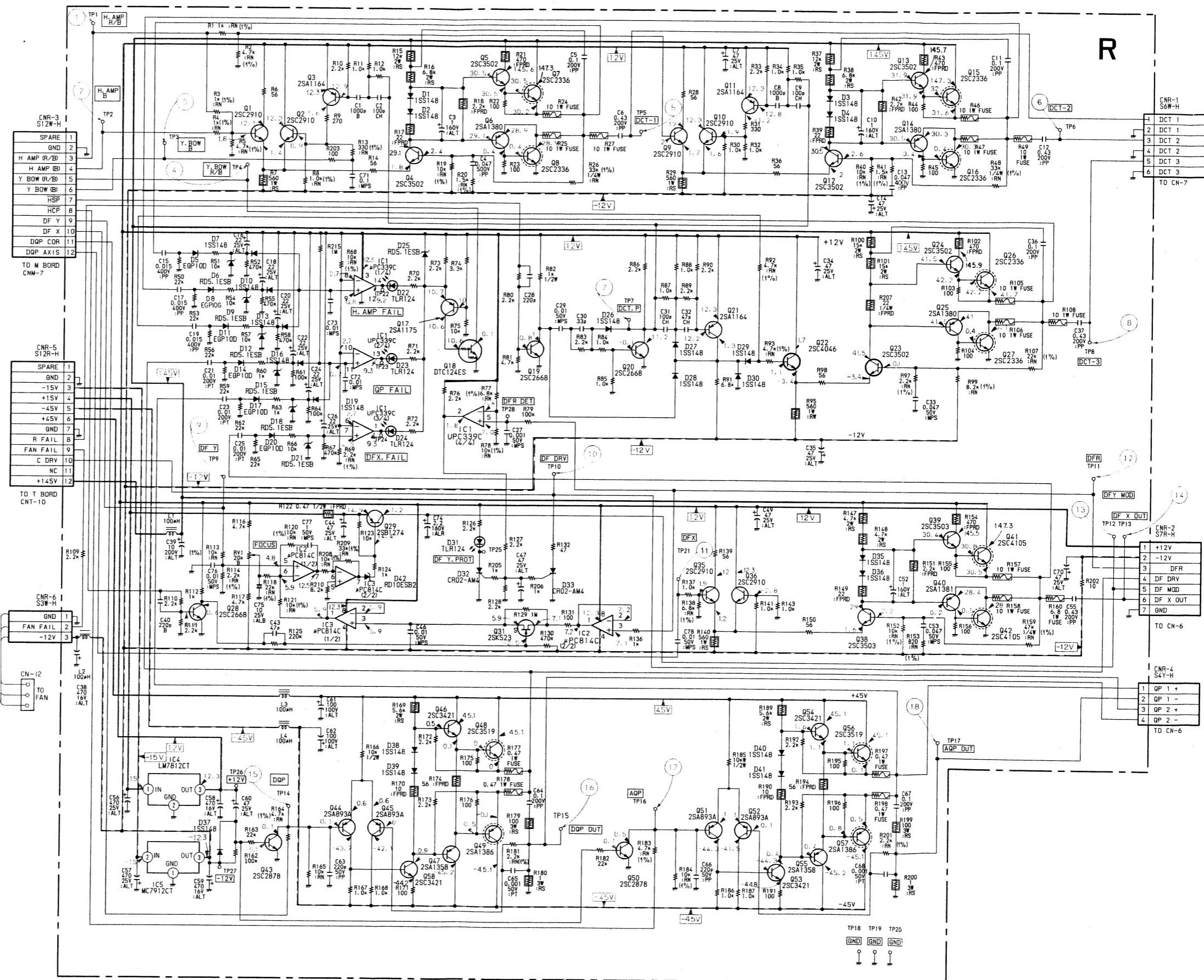
## —R Board—



1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15

## • R BOARD

(DDM-2801C; Serial No. 2,000,044 and higher)  
 (DDM-2802C; Serial No. 2,000,021 and higher)  
 (DDM-2801C2; Serial No. 2,000,050 and higher)  
 (DDM-2802C2; Serial No. 2,000,013 and higher)



R BOA	1 C1
	2
	3
	4
	5
	Q1
	2
	3
	4
	5
	6
	7
	8
	9
	10
	11
	12
	13
	14
	15
	16
	17
	18
	19
	20
	21
	22
	23
	24
	25
	26
	27
	28
	29
	30
	31
	32
	33
	34
	35
	36
	37
	38
	39
	40
	41
	42
	43
	44
	45
	46
	47
	48
	49
	50
	51
	52
	53
	54
	55
	56
	57
	58

—R BOARD—

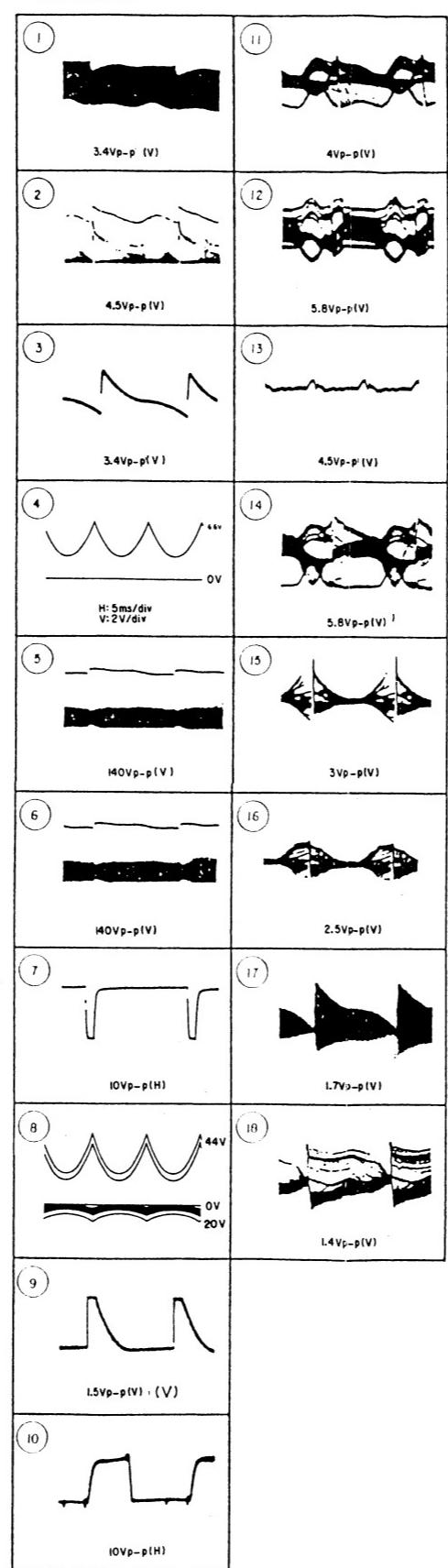
IC1	FAIL COMP
2	DFY MODU
3	DFY BUFF
4	12V REG
5	-12V REG
Q1	DCT PREAMP 1
2	DCT PREAMP 2
3	DCT PULSE 1
4	DCT DRIVE 1
5	DCT DRIVE 2
6	DCT DRIVE 3
7	DCT OUT 1
8	DCT OUT 2
9	DCT PREAMP 3
10	DCT PREAMP 4
11	DCT PULSE 2
12	DCT DRIVE 4
13	DCT DRIVE 5
14	DCT DRIVE 6
15	DCT OUT 3
16	DCT OUT 4
17	R FAIL 1
18	R FAIL 2
19	DCT PULSE 3
20	DCT PULSE 4
21	DCT PULSE 5
22	DCT PREAMP 4
23	DCT DRIVE 7
24	DCT DRIVE 8
25	DCT DRIVE 9
26	DCT OUT 5
27	DCT OUT 6
28	H.CENTER PULSE
29	DFY OUT
31	SAMPLE HOLD
35	DFX PREAMP 1
36	DFX PREAMP 2
38	DFX DRIVE 1
39	DFX DRIVE 2
40	DFX DRIVE 3
41	DFX OUT 1
42	DFX OUT 2
43	DQP MUTING
44	DQP PREAMP 1
45	DQP PREAMP 2
46	DQP DRIVE 1
47	DQP DRIVE 2
48	DQP OUT 1
49	DQP OUT 2
50	DQP MUTING
51	AQP PREAMP 1
52	AQP PREAMP 2
53	AQP DRIVE 1
54	AQP DRIVE 2
55	AQP DRIVE 3
56	AQP OUT 1
57	AQP OUT 2
58	DQP DRIVE 3

NR-1  
6W-H  
CT 1  
CT 1  
CT 2  
CT 2  
CT 3  
CT 3  
0 CN-7

NR-2  
7R-H  
12V  
12V  
DFR  
F.DRV  
F.MOD  
F.X OUT  
ND  
0 CN-6

NR-4  
4Y-H  
P 1 +  
P 1 -  
P 2 +  
P 2 -  
0 CN-6

—R BOARD—



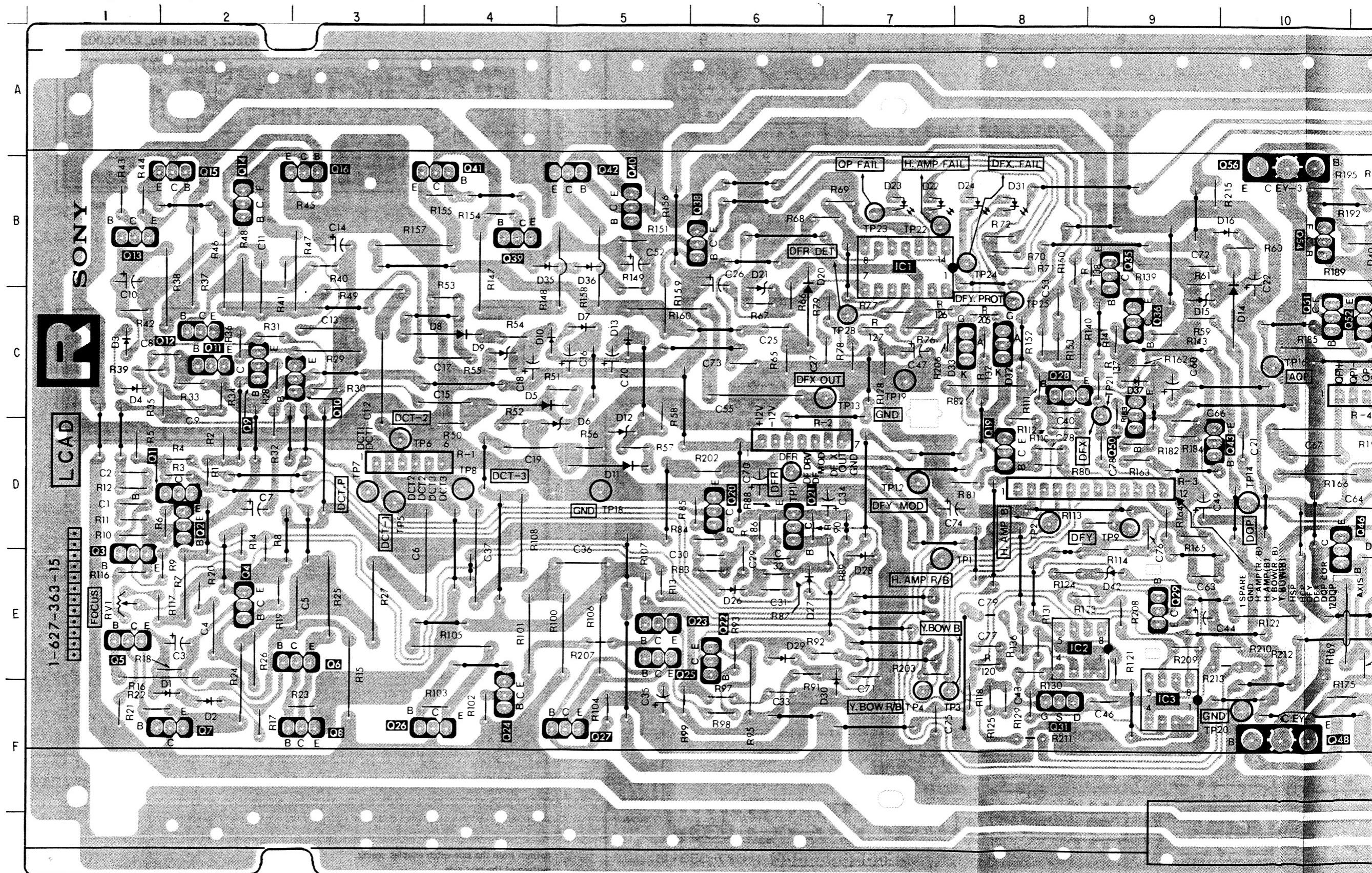
**R**

(H.CONVERGENCE, DOUBLE QUADRUPOLE, DYNAMIC FOCUS)

**R****-R BOARD-**

IC	D20	C6
IC1	B-7	C-6
IC2	E-8	B-7
IC3	F-9	B-7
IC4	B-12	B-8
IC5	F-12	B-13
TRANSISTOR	D26	E-6
	D27	E-7
	D28	E-6
	D29	F-7
Q1	D-2	B-8
Q2	D-2	C-8
Q3	E-1	C-8
Q4	E-2	B-4
Q5	E-1	B-5
Q6	E-3	C-9
Q7	F-2	E-11
Q8	F-3	E-11
Q9	C-2	E-11
Q10	C-3	B-11
Q11	C-2	B-11
Q12	C-2	E-9
Q13	B-1	
Q14	B-2	
Q15	B-2	
Q16	B-3	
Q17	B-13	
Q18	C-13	
Q19	D-8	
Q20	D-6	
Q21	D-6	
Q22	E-6	
Q23	E-5	
Q24	F-4	
Q25	E-5	
Q26	F-4	
Q27	F-5	
Q28	C-8	
Q29	E-9	
Q30	F-8	
Q31	B-9	
Q32	C-9	
Q33	B-6	
Q34	C-7	
Q35	D-10	
Q36	D-7	
Q37	D-7	
Q38	C-7	
Q39	B-4	
Q40	B-5	
Q41	B-4	
Q42	B-5	
Q43	D-9	
Q44	D-11	
Q45	D-11	
Q46	D-10	
Q47	E-12	
Q48	F-10	
Q49	F-11	
Q50	C-9	
Q51	C-10	
Q52	C-11	
Q53	B-11	
Q54	B-10	
Q55	B-12	
Q56	B-10	
Q57	B-11	
Q58	C-7	
VARIABLE RESISTOR	RV1	E-1
TESTPOINT	TP1	E-7
TP2	D-8	
TP3	F-8	
TP4	F-7	
TP5	D-3	
TP6	D-3	
TP7	D-3	
TP8	D-4	
TP9	D-9	
TP10	E-12	
TP11	E-12	
TP12	D-7	
TP13	C-7	
TP14	D-10	
TP15	D-11	
TP16	C-10	
TP17	C-11	
TP18	D-5	
TP19	C-7	
TP20	F-10	
TP21	D-9	
TP22	B-7	
TP23	B-7	
TP24	B-8	
TP25	C-8	
TP26	B-8	
TP27	B-12	
TP28	F-13	
DIODE	D1	F-2
D2	F-2	
D3	C-1	
D4	C-1	
D5	C-4	
D6	D-4	
D7	C-5	
D8	C-4	
D9	C-4	
D10	C-4	
D11	D-5	
D12	D-5	
D13	C-5	
D14	C-10	
D15	C-9	
D16	B-10	
D17	C-12	
D18	B-12	
D19	B-12	

**-R BOARD-** (DDM-2801C ; Serial No. 2,000,044 and higher) (DDM-2801C2 ; Serial No. 2,000,050 and higher)  
 (DDM-2802C ; Serial No. 2,000,021 and higher) (DDM-2802C2 ; Serial No. 2,000,013 and higher)

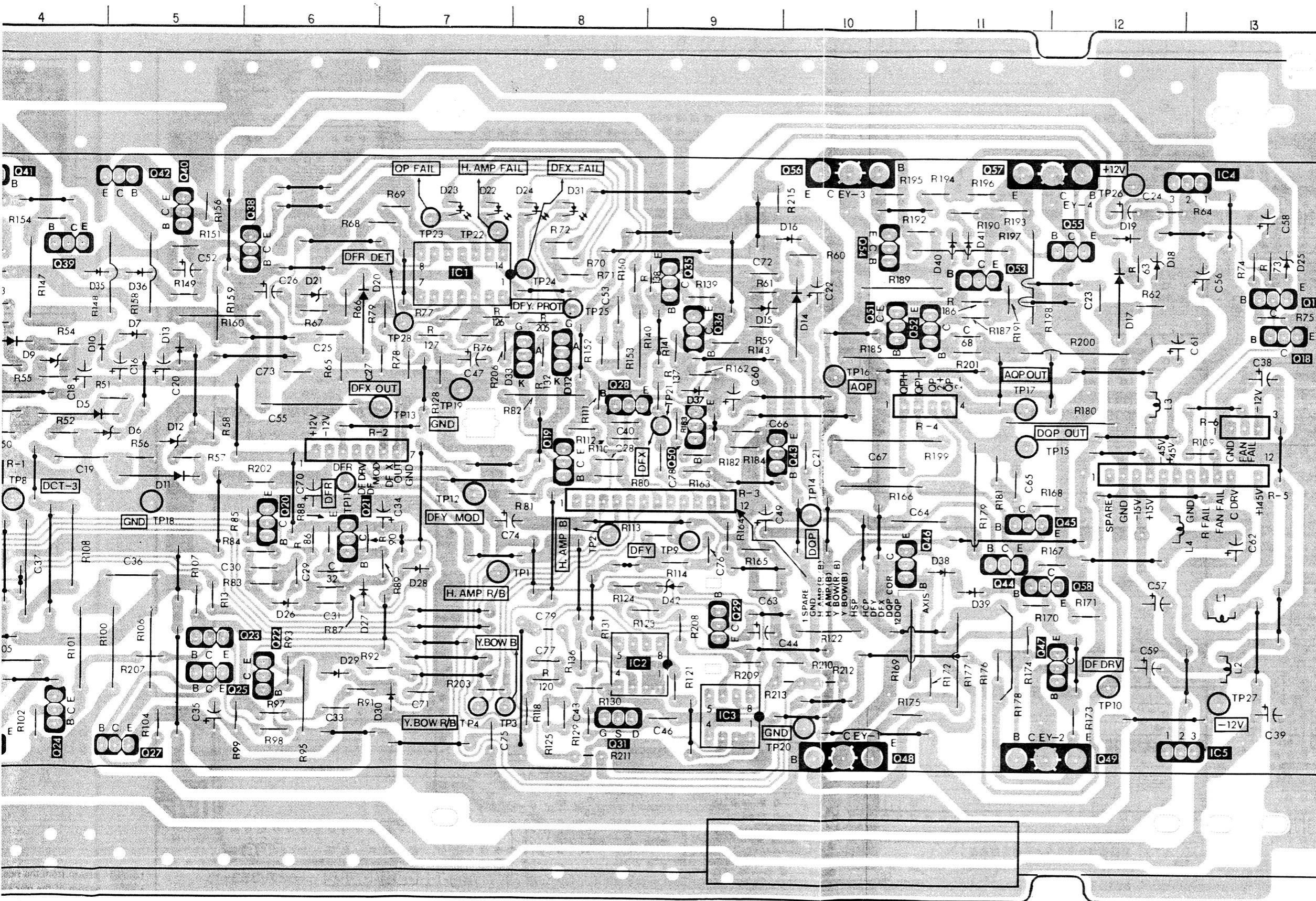


R

R

2801C2; Serial No. 2,000,050 and higher)

2802C2; Serial No. 2,000,013 and higher)



**M2**

(DEFLECTION, FOCUS, D/A BLOCK)

—M2 BOARD—

(DDM-2801C; Serial No. 2,000,006 and higher) (DDM-2801C2; Serial No. 2,000,004 and higher)  
(DDM-2802C; Serial No. 2,000,001 and higher) (DDM-2802C2; Serial No. 2,000,002 and higher)

IC

IC1	A-2
IC2	A-1
IC3	B-7
IC4	B-8
IC5	B-9
IC6	B-6
IC7	A-9
IC8	F-7
IC9	C-9
IC10	C-7
IC11	D-9
IC12	D-7
IC13	E-9
IC14	E-7
IC15	F-9
IC17	B-5
IC18	F-5
IC19	E-5
IC20	F-6
IC21	F-5
IC22	C-1
IC23	C-1
IC24	B-1
IC25	F-1
IC26	D-1
IC27	D-5
IC28	C-5

TRANSISTOR

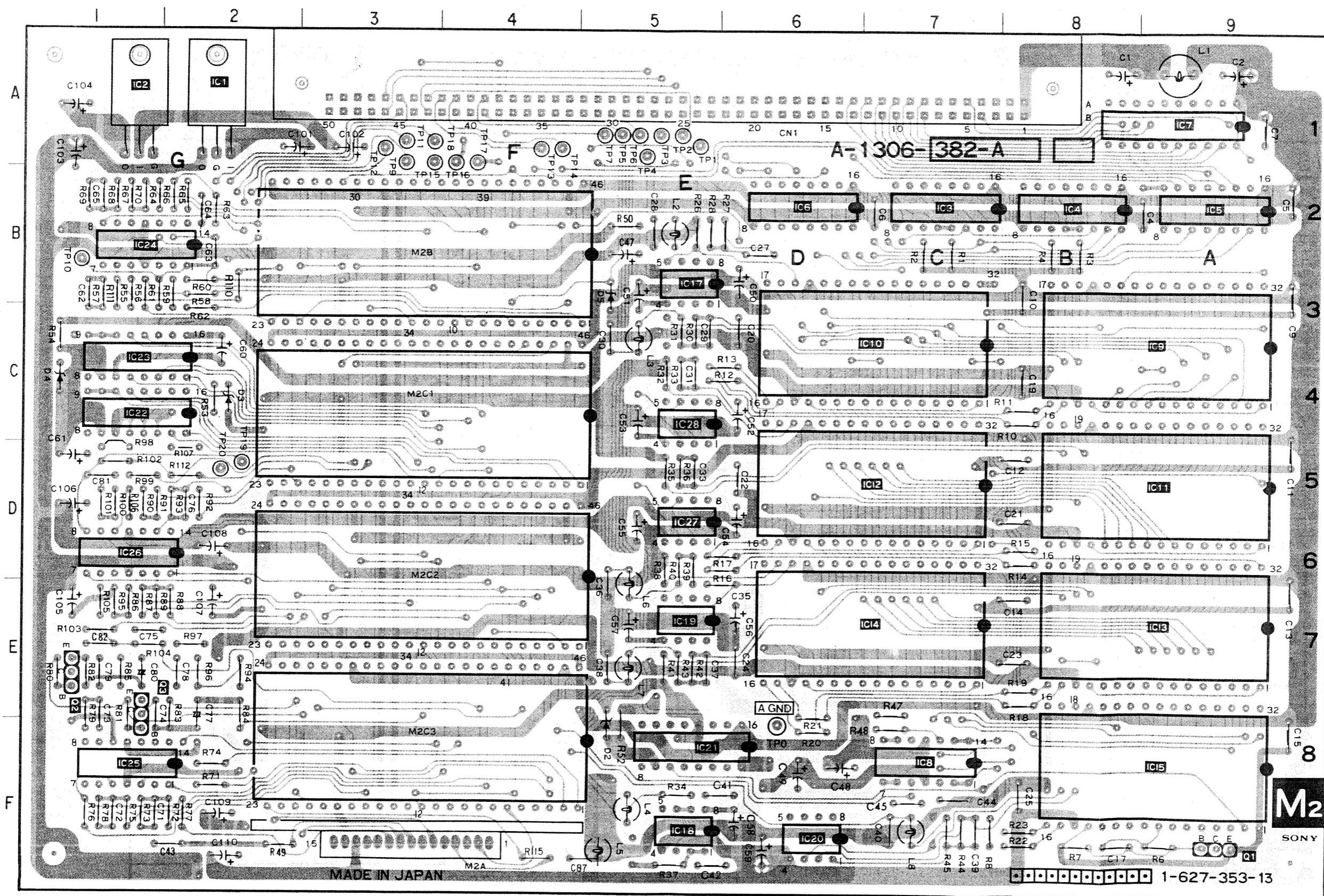
Q1	F-9
Q2	E-1
Q3	E-1

DIODE

D2	F-5
D3	C-2
D4	C-1
D5	B-5

TESTPOINT

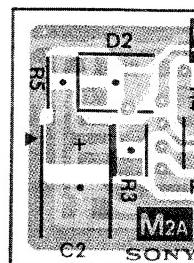
TP0	F-6
TP1	A-5
TP2	A-5
TP3	A-3
TP4	A-4
TP5	A-5
TP6	A-5
TP7	A-5
TP9	A-3
TP10	B-1
TP11	A-3
TP12	A-3
TP13	A-4
TP14	A-4
TP15	A-3
TP16	A-4
TP17	A-4
TP18	A-3
TP19	D-2
TP20	D-2



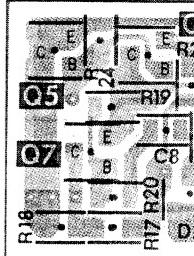
**M2**

**M2A**

—M2A Board—

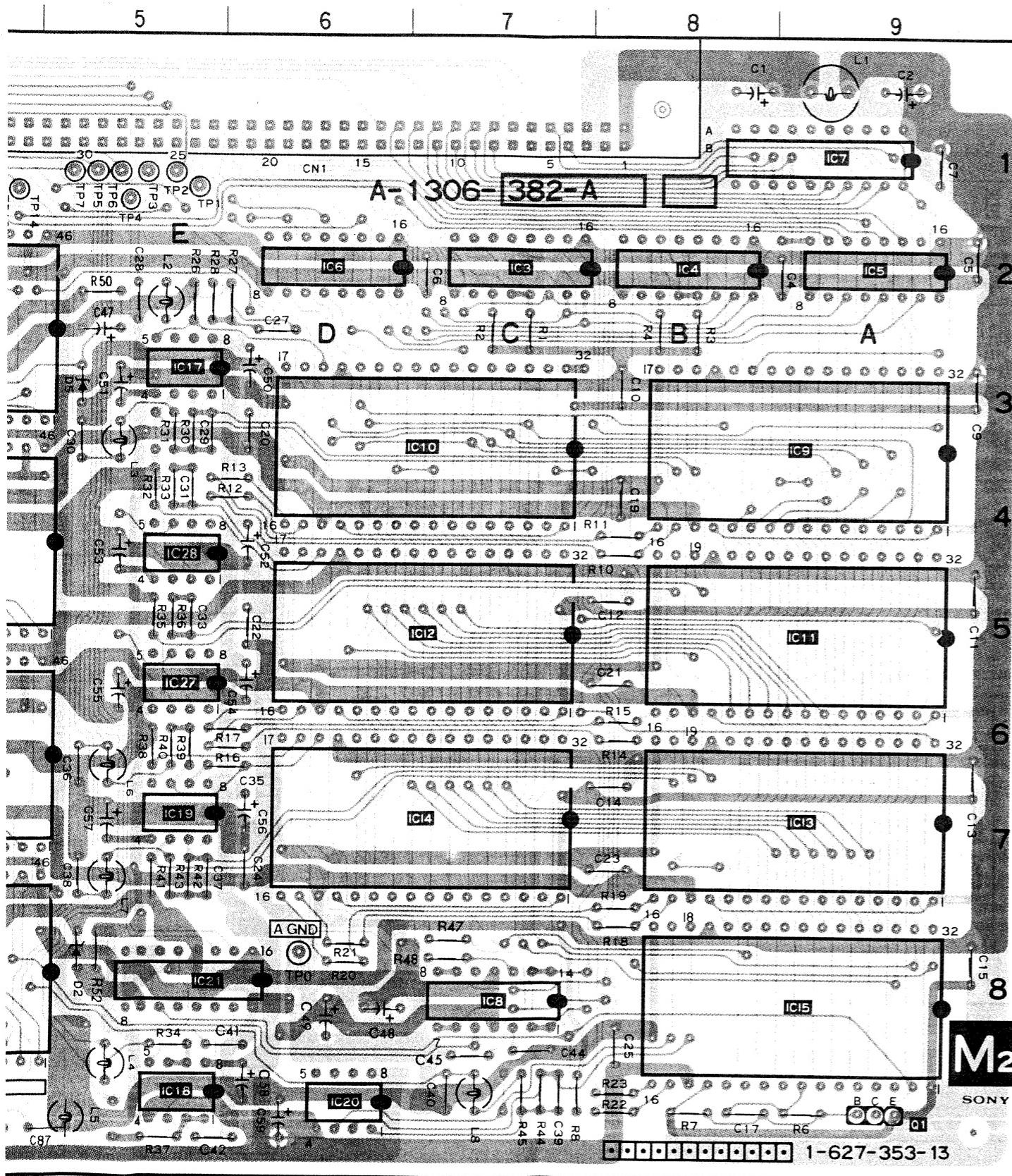


—M2A Board—



M2

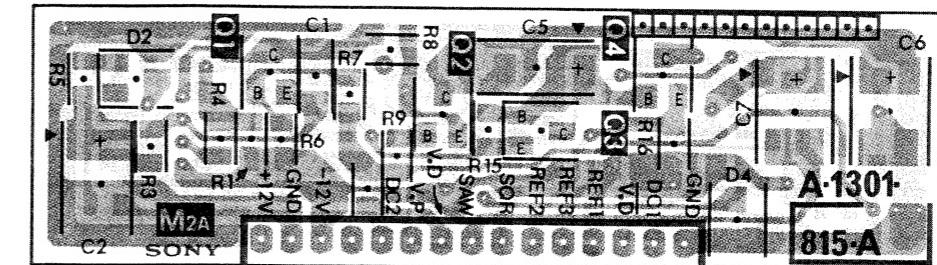
Serial No. 2,000,004 and higher)  
Serial No. 2,000,002 and higher)



M2A

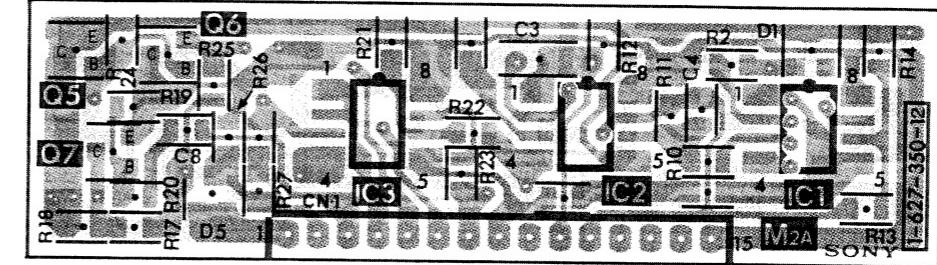
(REFERENCE SIGNAL GENERATOR)

—M2A Board— Conductor side— (DDM-2801C ; Serial No. 2,000,006 and higher)  
(DDM-2802C ; Serial No. 2,000,001 and higher)  
(DDM-2801C2 ; Serial No. 2,000,004 and higher)  
(DDM-2802C2 ; Serial No. 2,000,002 and higher)



- : pattern from the side which enables seeing.
- : pattern of the rear side.

—M2A Board— Component side—

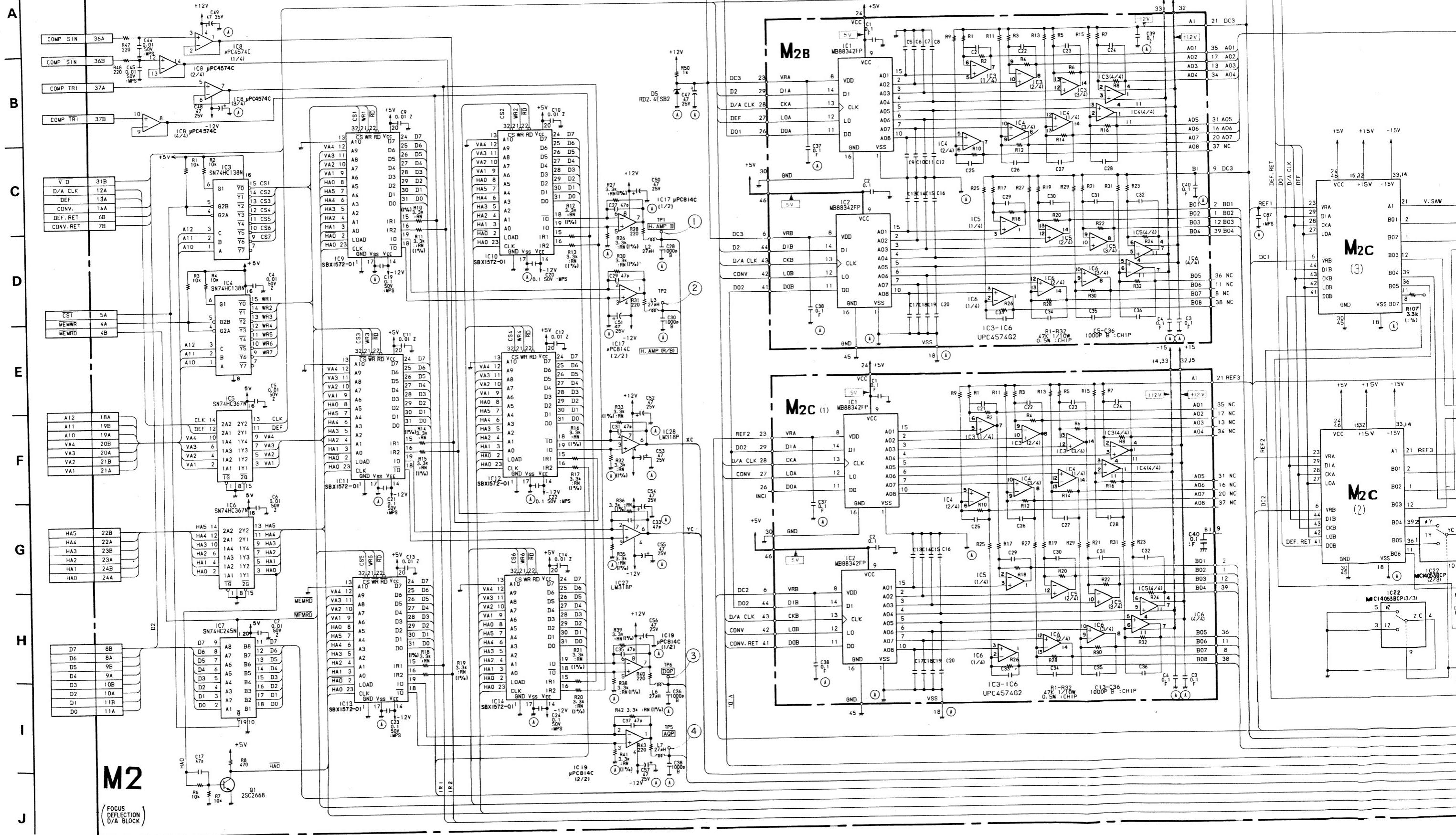


- : pattern from the side which enables seeing.
- : pattern of the rear side.

- : pattern from the side which enables seeing.
- : pattern of the rear side.

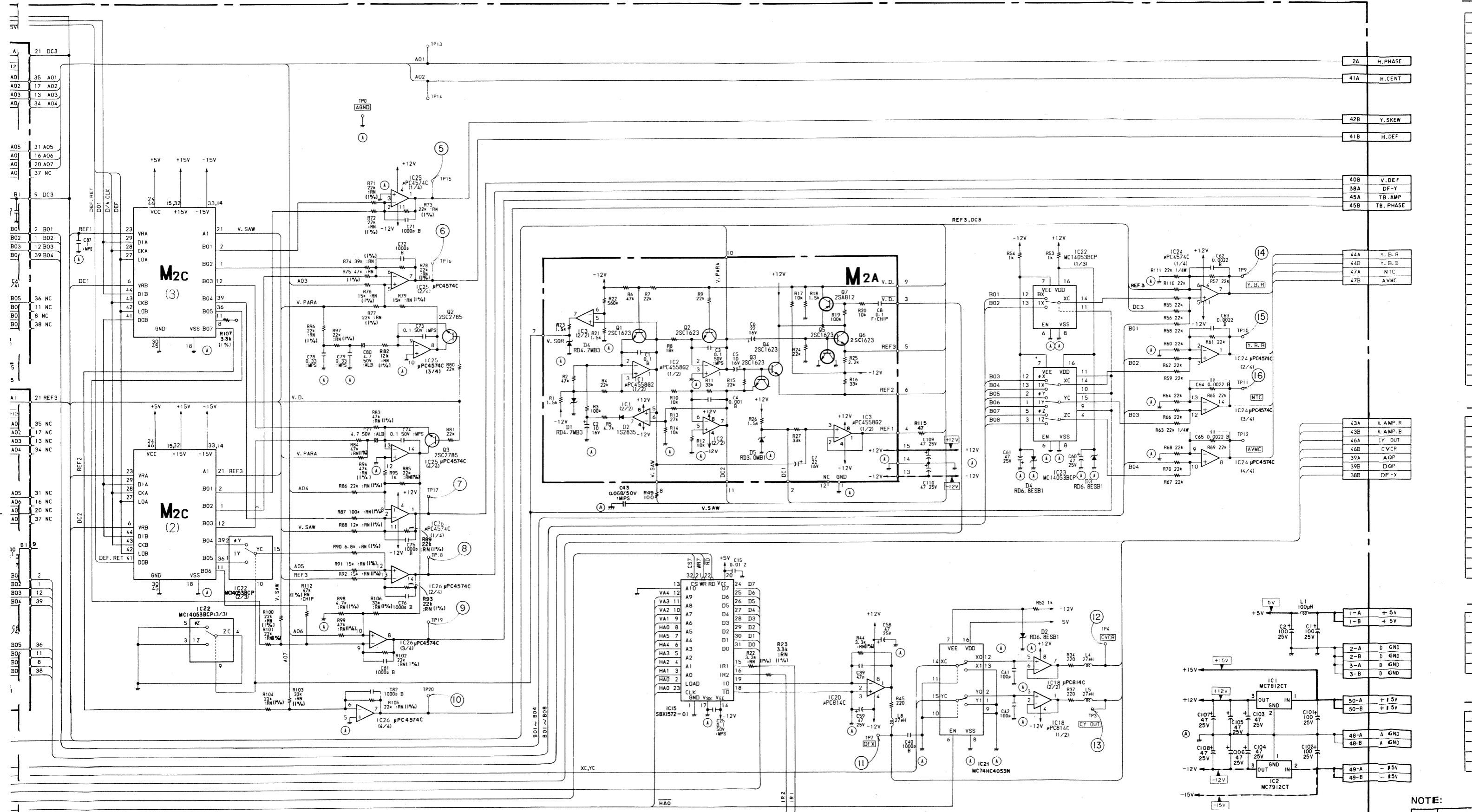
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

M2 BOARDS (DDM-2801C; Serial No. 2,000,006 and higher) (DDM-2802C; Serial No. 2,000,001 and higher) (DDM-2801C2; Serial No. 2,000,004 and higher) (DDM-2802C2; Serial No. 2,000,002 and higher)

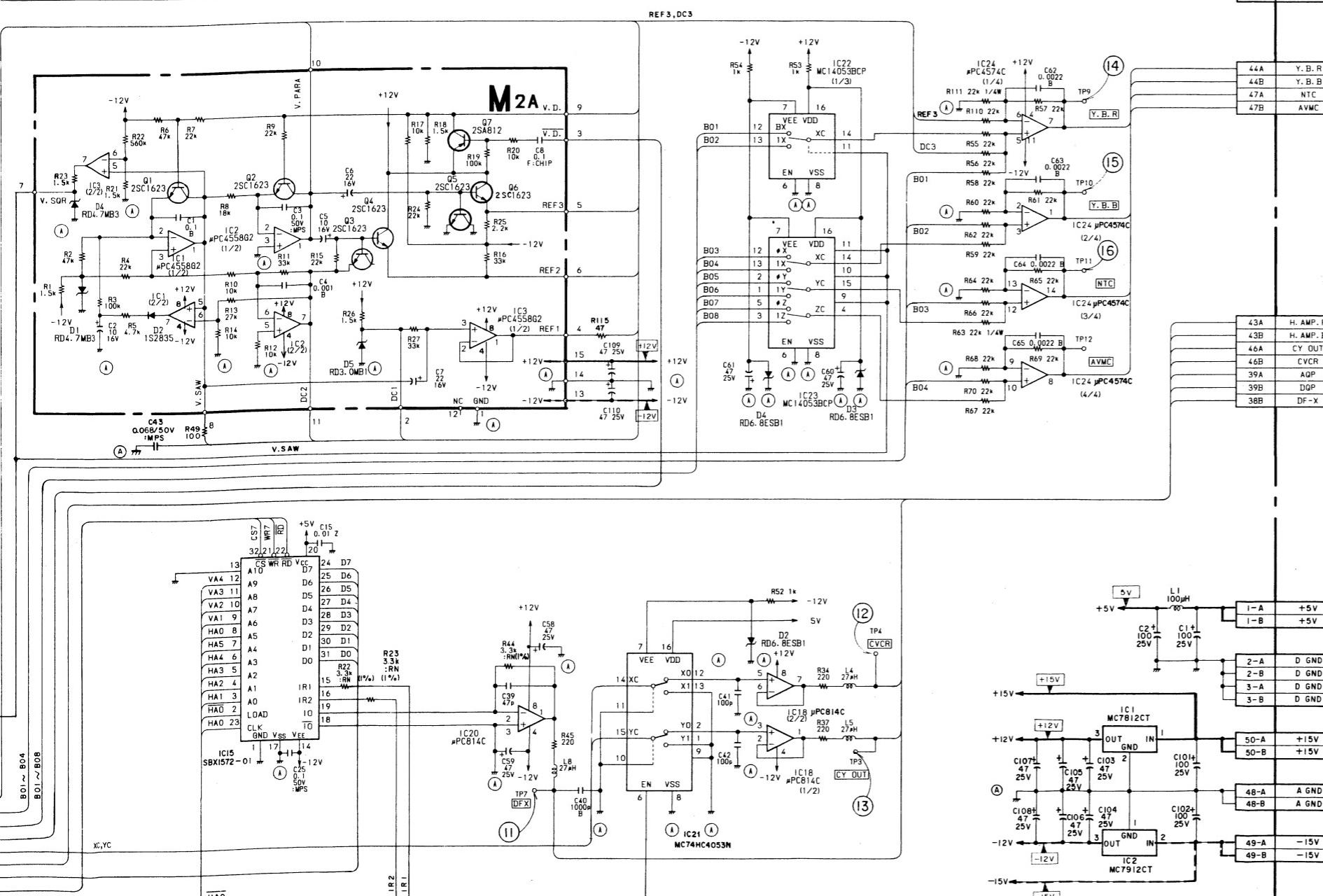


14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

1 higher)



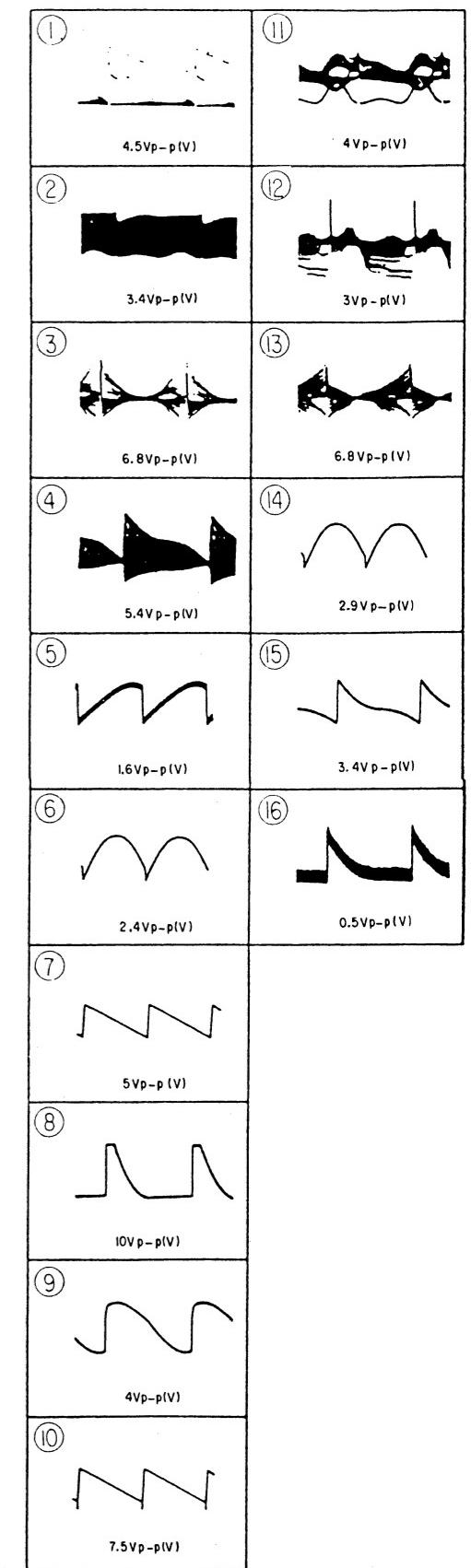
20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30



**M2 BOARD**

IC1	+12V REG
2	-12V REG
3	DECODER
4	DECODER
5	ADRS BUFF
6	ADRS BUFF
7	DATA BUFF
8	(QUAD) OP AMP
9	DIGITAL WAVE GEN
10	DIGITAL WAVE GEN
11	DIGITAL WAVE GEN
12	DIGITAL WAVE GEN
13	DIGITAL WAVE GEN
14	DIGITAL WAVE GEN
15	DIGITAL WAVE GEN
17	(DUAL) OP AMP
18	(DUAL) OP AMP
19	(DUAL) OP AMP
20	(DUAL) OP AMP
21	ANALOG SWITCH
22	ANALOG SWITCH
23	ANALOG SWITCH
24	(QUAD) OP AMP
25	(QUAD) OP AMP
26	(QUAD) OP AMP
27	OP AMP
28	OP AMP
Q1	INVERTER
2	DISCHARGER
3	DISCHARGER
D2	-6.5V REG
3	+6.5V REG
4	-6.5V REG
5	+2.5V REG

**M2 BOARD**



**M2A BOARD**

IC1	DUAL OA AMP
43B	H. AMP. B
46A	CY OUT
46B	CVCR
39A	AOP
39B	DOP
38B	DF-X
Q1	DISCHARGER
2	DISCHARGER
3	CLAMPER
4	CLAMPER
5	CLAMPER
6	CLAMPER
7	INVERTER
D1	-5V REF VOLT
2	RECT
4	SLICE
5	+3V REF VOLT

**M2B BOARD**

IC1	8CH DAC
2	8CH DAC
3	(QUAD) OP AMP
4	(QUAD) OP AMP
5	(QUAD) OP AMP
6	(QUAD) OP AMP

**M2C BOARD**

IC1	8CH DAC
2	8CH DAC
3	(QUAD) OP AMP
4	(QUAD) OP AMP
5	(QUAD) OP AMP
6	(QUAD) OP AMP

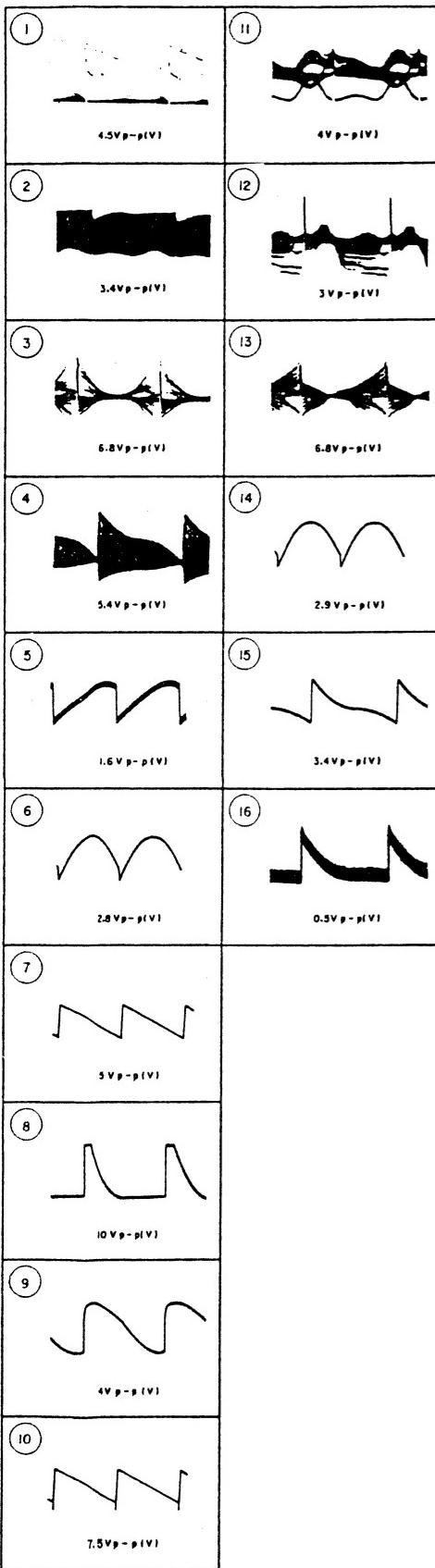
NOTE:

	Digital GND
	Analog GND

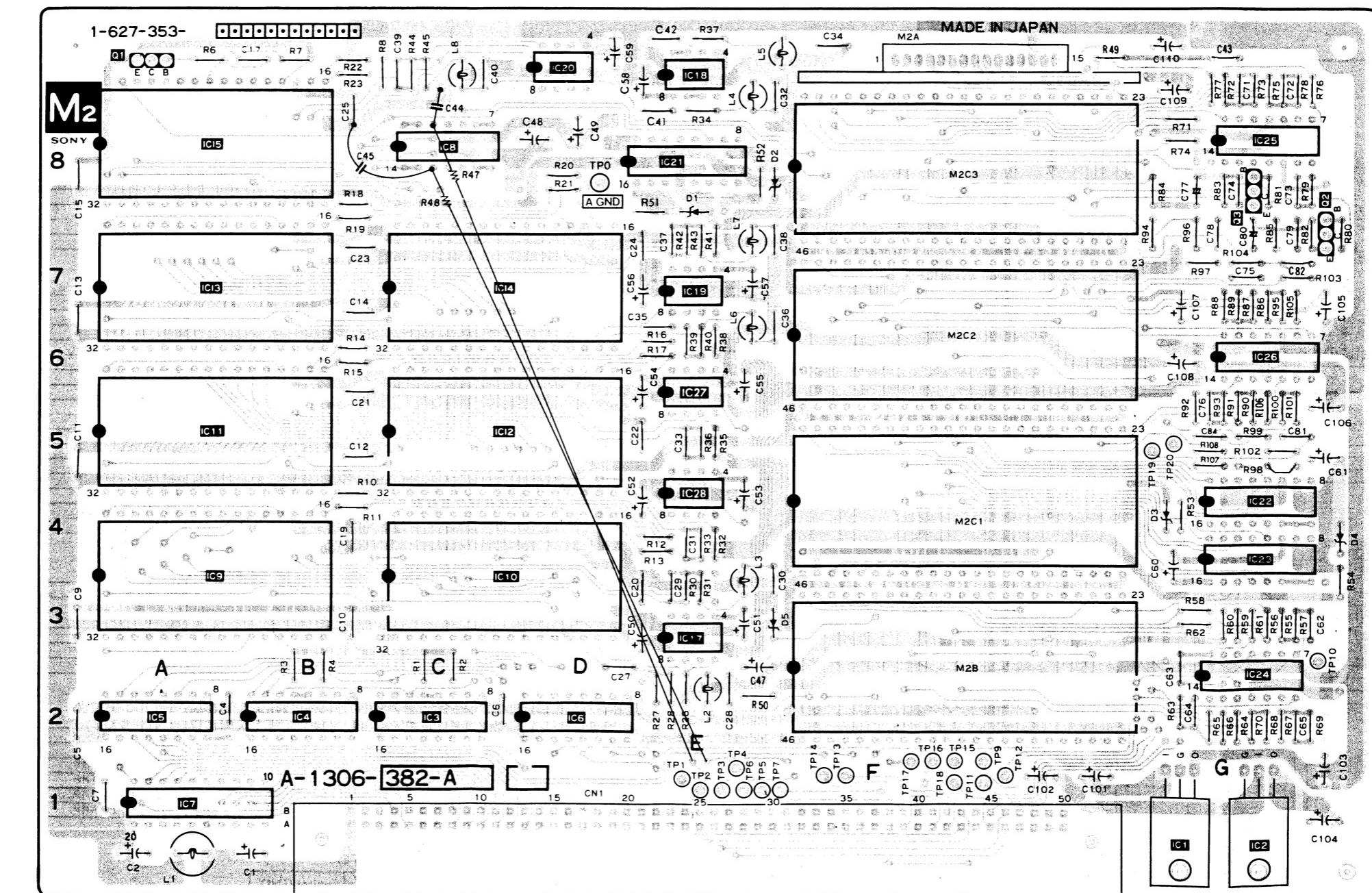
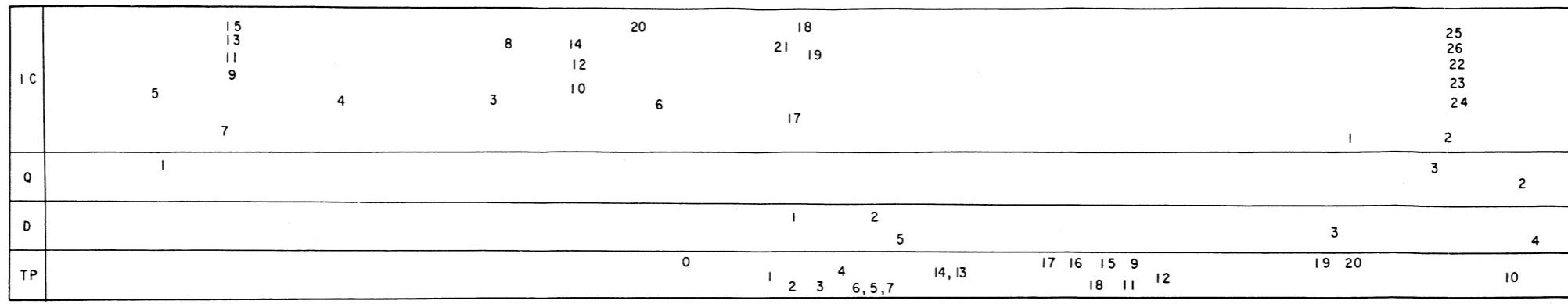
**M2**

(DEFLECTION CONVERGENCE CONTROL)

—M2 Board—



—M2 BOARD— (DDM-2801C; Serial No. up-to 2,000,005) (DDM-2801C2; Serial No. up-to 2,000,003)  
(DDM-2802C; Serial No. 10,001–10,003) (DDM-2802C2; Serial No. up-to 2,000,001)

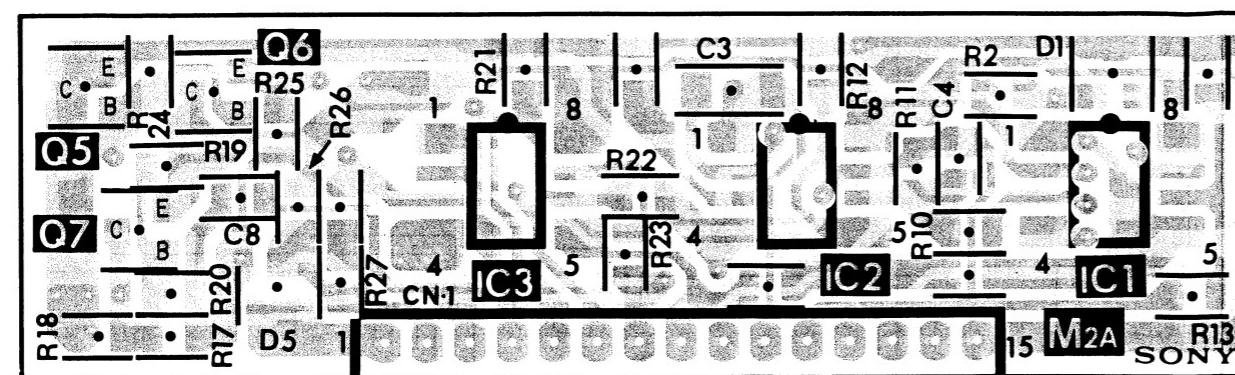


**M2A    M2B    M2C**

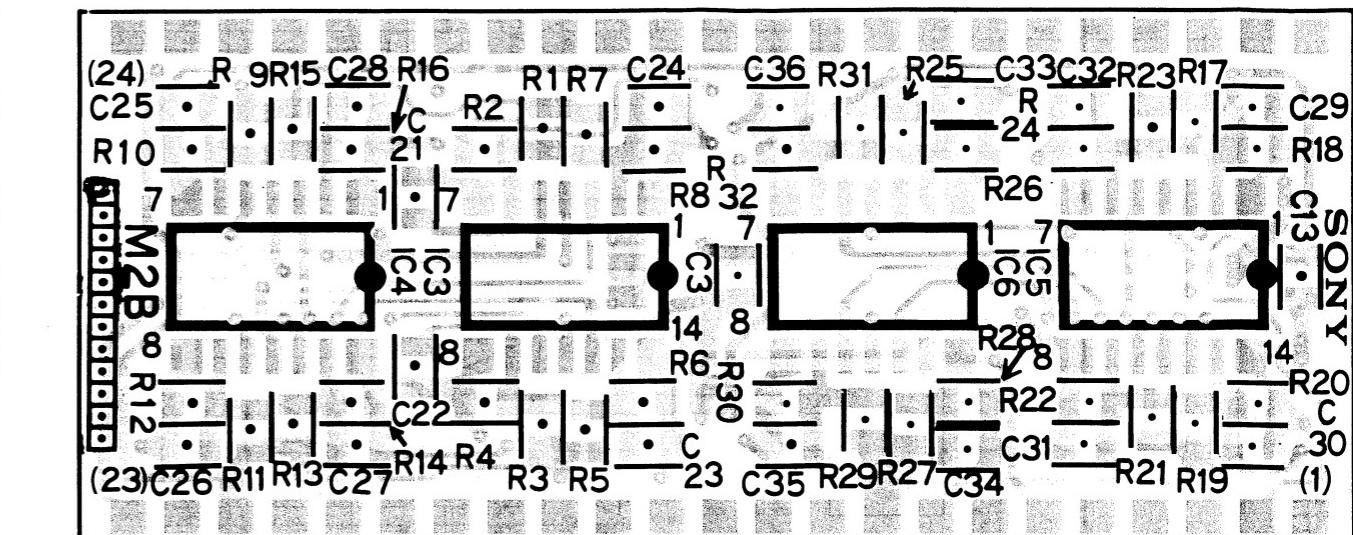
M2A

**—M2A BOARD—** (DDM-2801C; Serial No. up-to 2,000,005) (DDM-2801C2; Serial No. up-to 2,000,005)  
(DDM-2802C; Serial No. 10,001—10,003) (DDM-2802C2; Serial No. up-to 2,000,003)

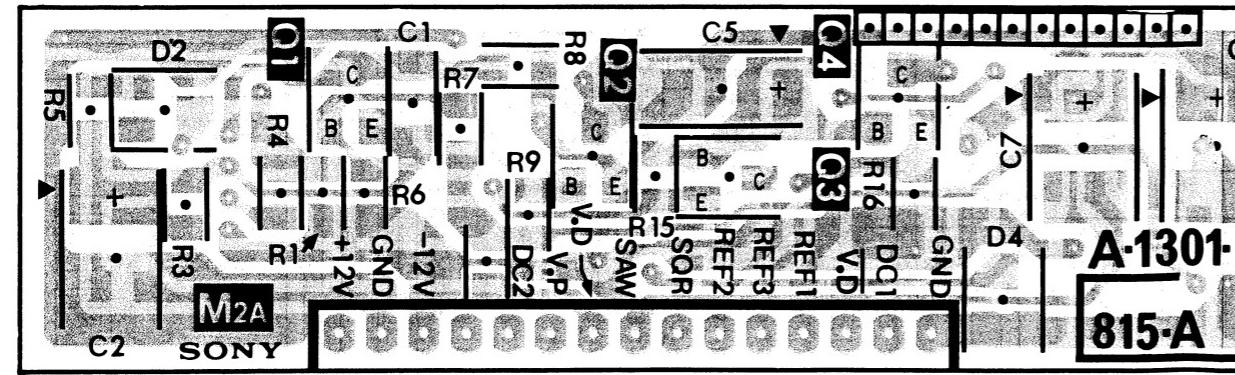
#### **—M2A Board— Component side**



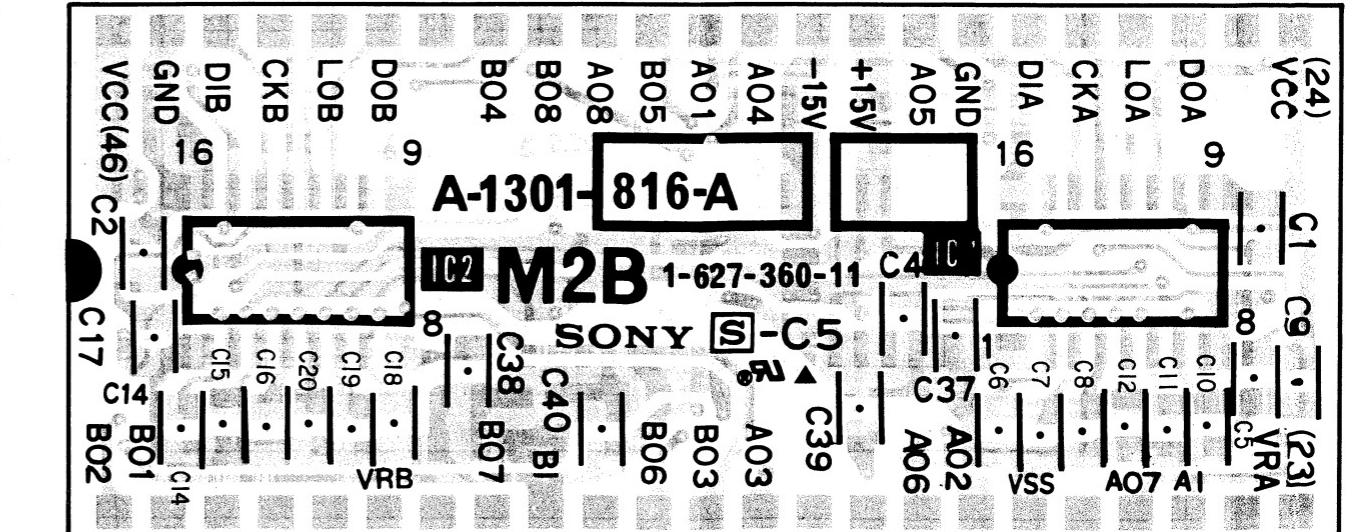
**—M2B Board— Component side—**



**=M2A Board=** -- Conductor side



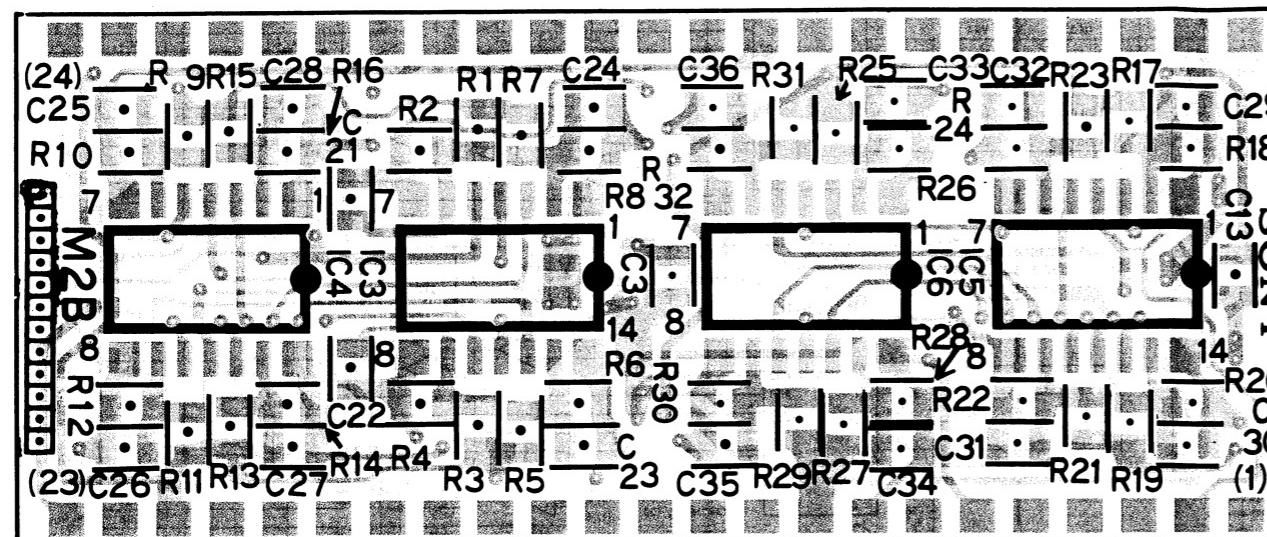
**-M2B Board- -Conductor side-**



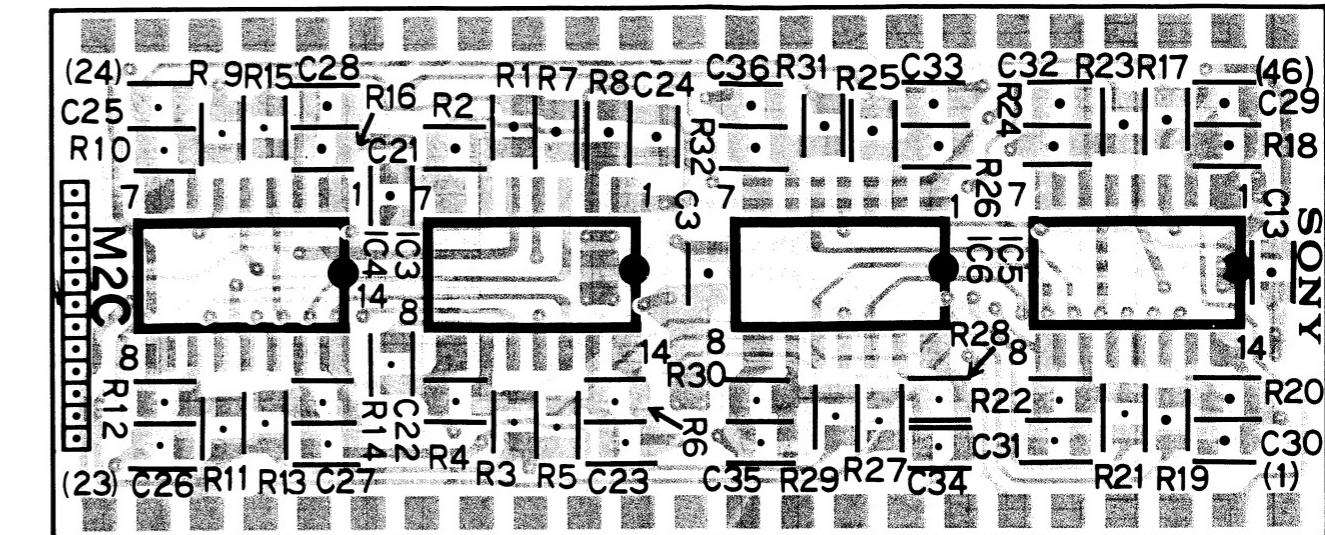
M2A M2B M2C

al lo. up-to 2,000,003)  
al No. up-to 2,000,001)

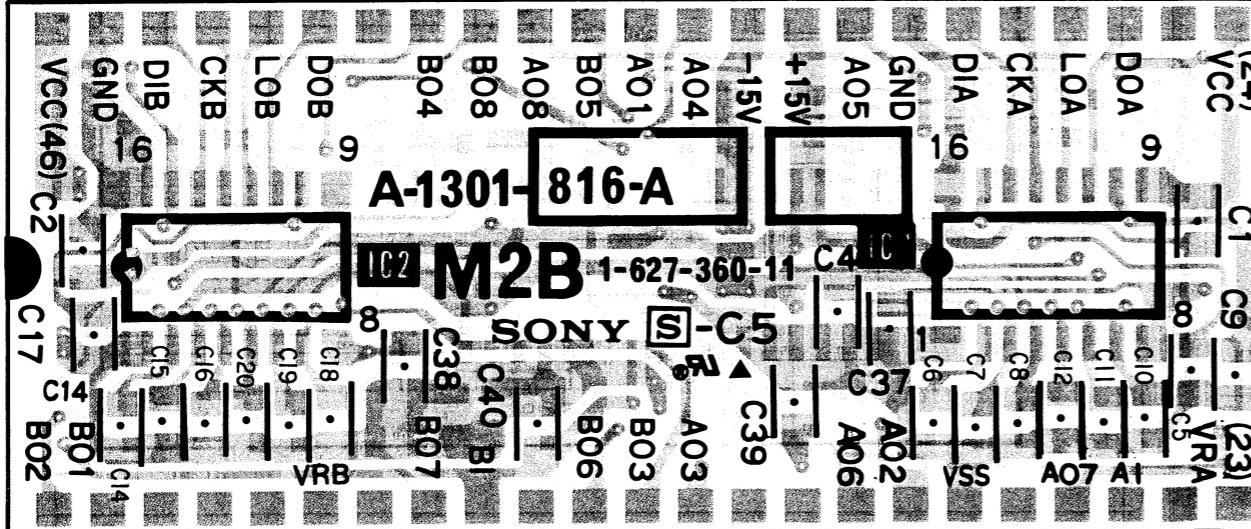
—M2B Board— Component side—



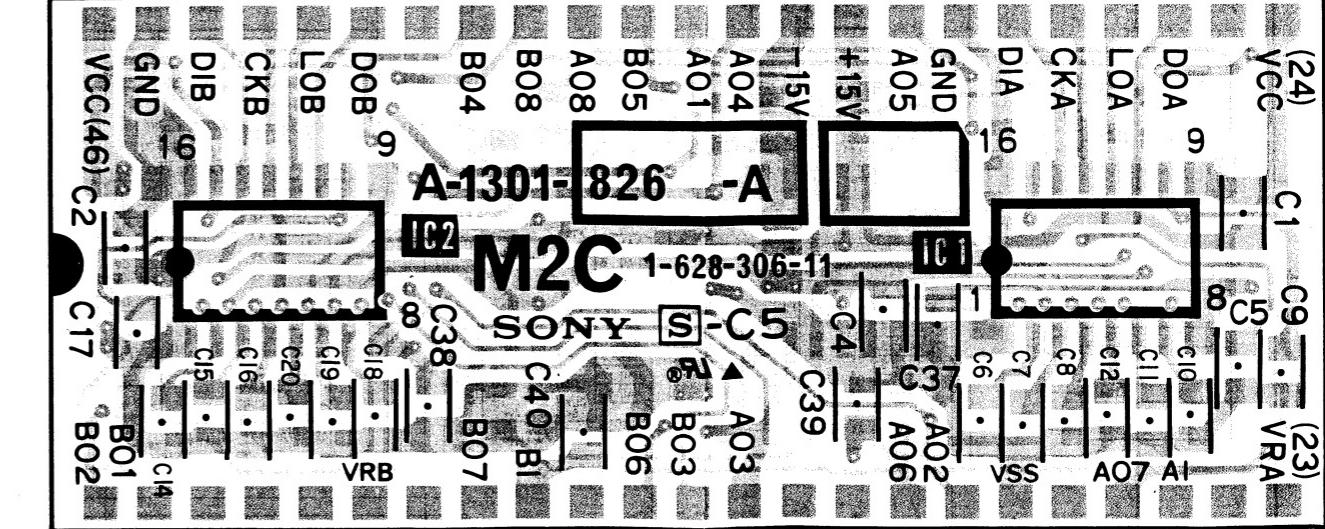
—M2C Board— Component side—



—M2B Board— Conductor side—

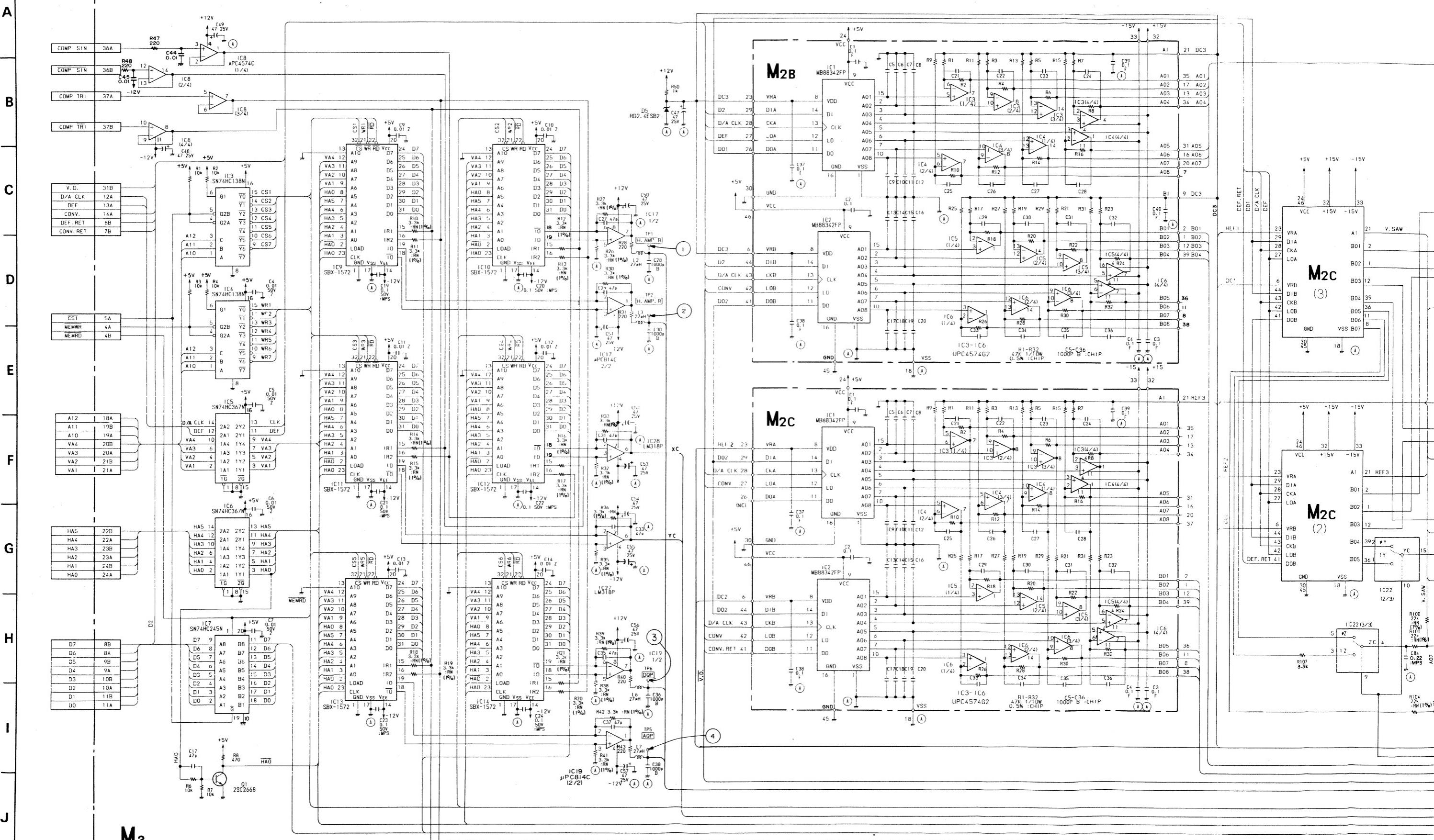


—M2C Board— Conductor side—

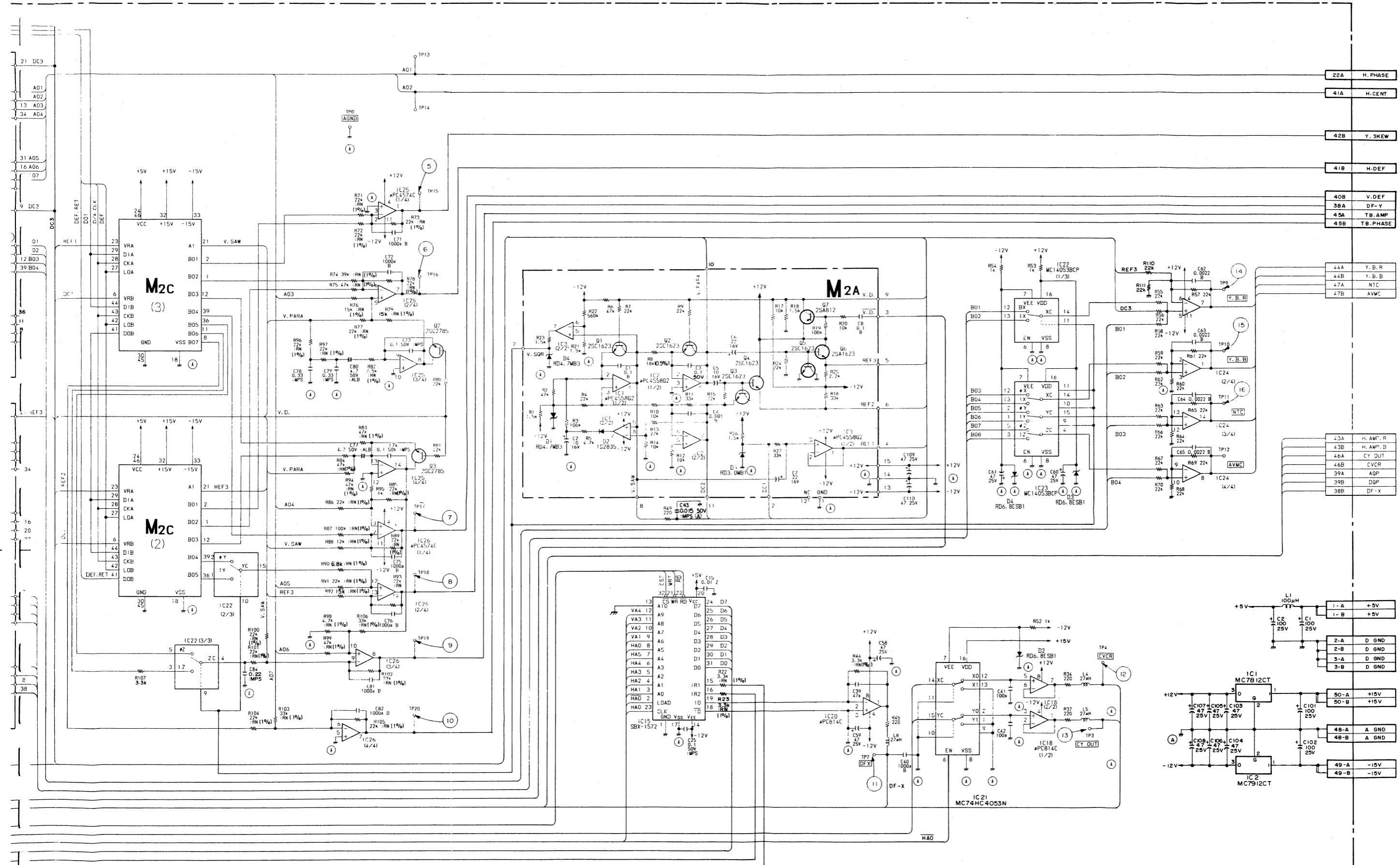


■ : pattern from the side which enables seeing.  
■ : pattern of the rear side.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16



14 15 16 17 18 19 20 21 22 23 24 25 26 27 28



- M2 and M2A BOAR**  
(DDM-2801C ; Seri  
(DDM-2802C ; Seri  
(DDM-2801C2 ; Seri  
(DDM-2802C2 ; Seri

- M2B and M2C BOA**  
(DDM-2801C/2802C

I C1	1
	2
	3
	4
	5
	6
	7
	8
	9
	10
	11
	12
	13
	14
	15
	16
	17
	18
	19
	20
	21
	22
	23
	24
	25
	26
	27
	28

Q1

2

3

4

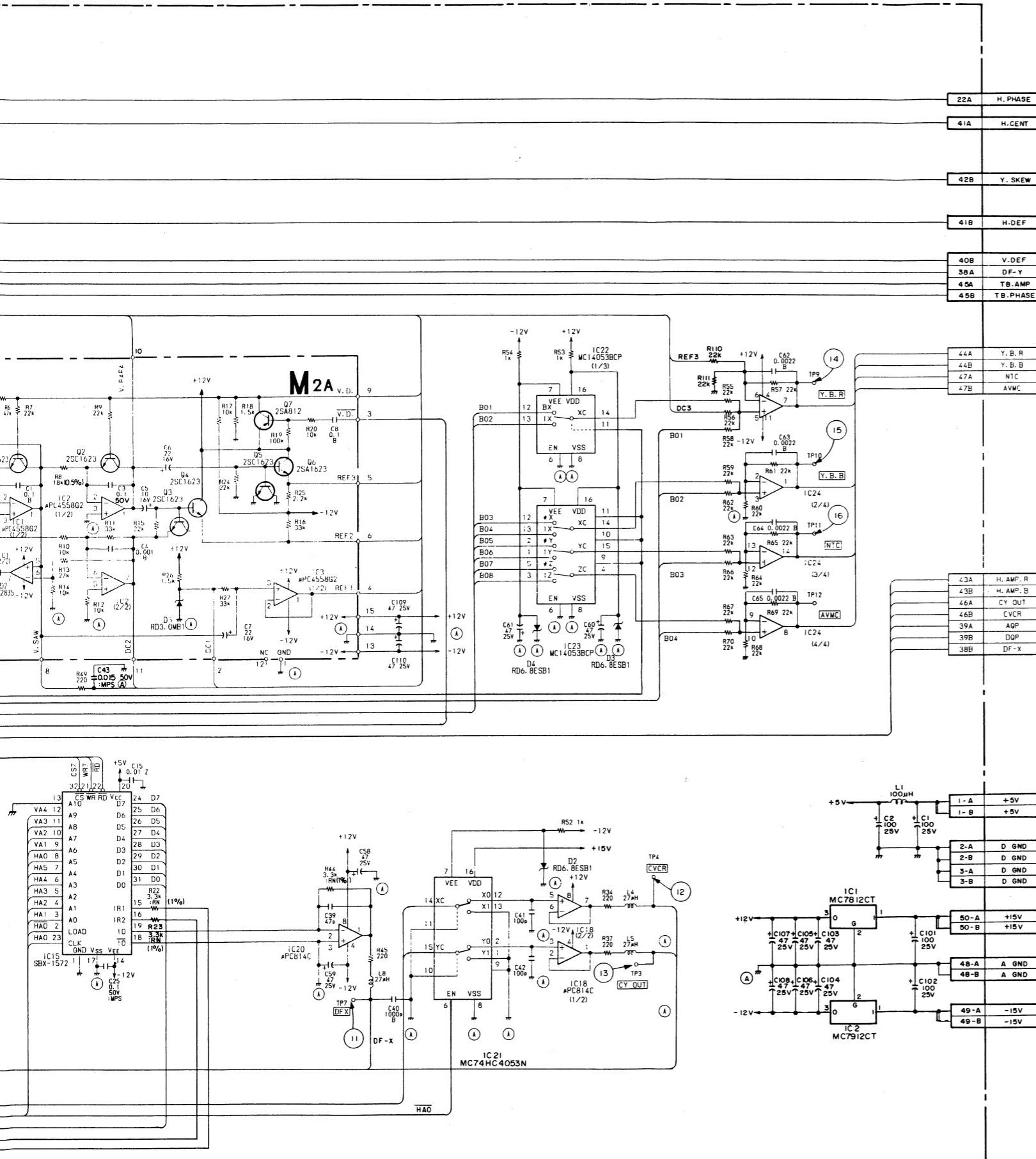
5

NOTE:

Digital GND

Analog GND

9 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 |



**M2 and M2A BOARD**  
(DDM-2801C; Serial No. up-to 2,000,005)  
(DDM-2802C; Serial No. 10,001–10,003)  
(DDM-2801C2; Serial No. up-to 2,000,003)  
(DDM-2802C2; Serial No. up-to 2,000,001)

**M2B and M2C BOARD**  
(DDM-2801C/2802C/2801C2/2802C2; Serial No. 10,001 and higher)

**—M2 Board—**

IC1	+12V REG
2	-12V REG
3	DECODER
4	DECODER
5	ADRS BUFF
6	ADRS BUFF
7	DATA BUFF
8	(QUAD) OP AMP
9	DIGITAL WAVE GEN
10	DIGITAL WAVE GEN
11	DIGITAL WAVE GEN
12	DIGITAL WAVE GEN
13	DIGITAL WAVE GEN
14	DIGITAL WAVE GEN
15	DIGITAL WAVE GEN
16	(DUAL) OP AMP
17	(DUAL) OP AMP
18	(DUAL) OP AMP
19	(DUAL) OP AMP
20	(DUAL) OP AMP
21	ANALOG SWITCH
22	ANALOG SWITCH
23	ANALOG SWITCH
24	(QUAD) OP AMP
25	(QUAD) OP AMP
26	(QUAD) OP AMP
27	OP AMP
28	OP AMP
Q1	INVERTER
2	DISCHARGER
3	DISCHARGER
4	-5V REF VOLT
5	RECT
6	SLICE
7	+3V REF VOLT

**—M2A Board—**

IC1	DUAL OA AMP
2	DUAL OA AMP
3	DUAL OA AMP
Q1	DISCHARGER
2	DISCHARGER
3	CLAMPER
4	CLAMPER
5	CLAMPER
6	CLAMPER
7	INVERTER
D1	
2	-5V REF VOLT
4	SLICE
5	+3V REF VOLT

**—M2B Board—**

IC1	8CH DAC
2	8CH DAC
3	(QUAD) OP AMP
4	(QUAD) OP AMP
5	(QUAD) OP AMP
6	(QUAD) OP AMP

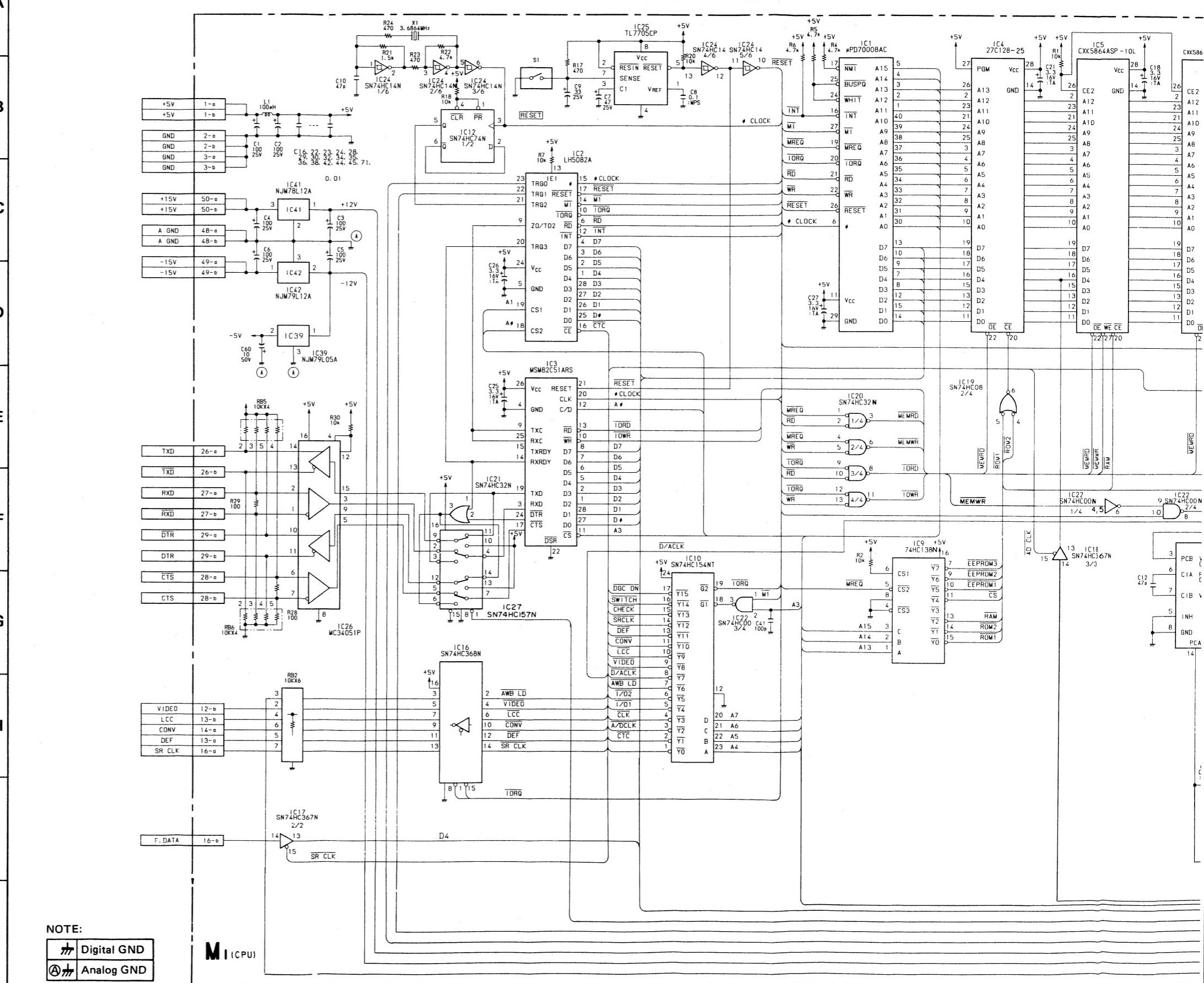
**—M2C Board—**

IC1	8CH DAC
2	8CH DAC
3	(QUAD) OP AMP
4	(QUAD) OP AMP
5	(QUAD) OP AMP
6	(QUAD) OP AMP

**NOTE:**

	Digital GND
	Analog GND

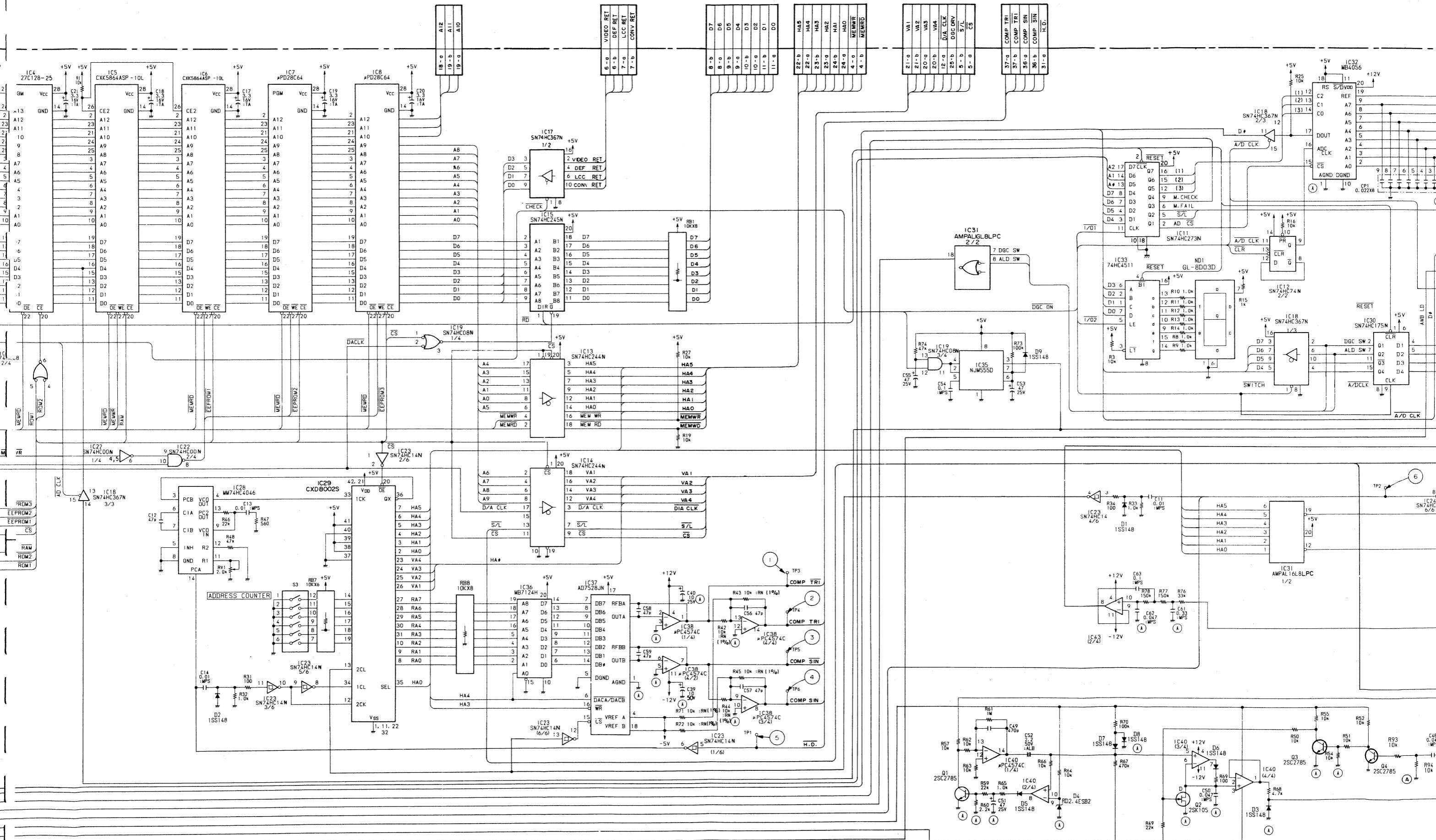
**M1 BOARD** (DDM-2801C; Serial No. 2,000,006 and higher) (DDM-2801C2; Serial No. 2,000,004 and higher)  
(DDM-2802C; Serial No. 2,000,001 and higher) (DDM-2802C2; Serial No. 2,000,002 and higher)



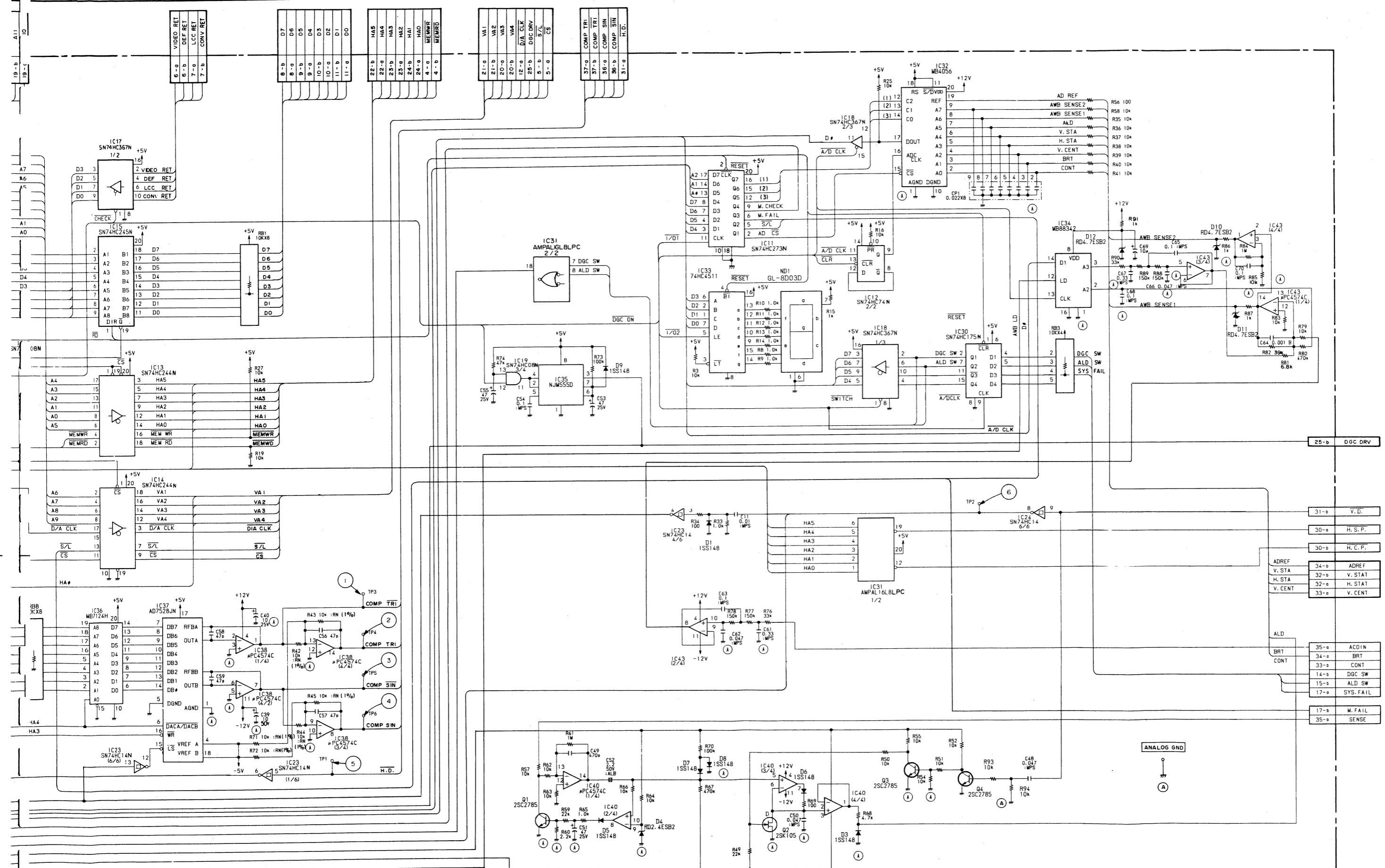
**NOTE:**

	Digital GND
	Analog GND

10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26



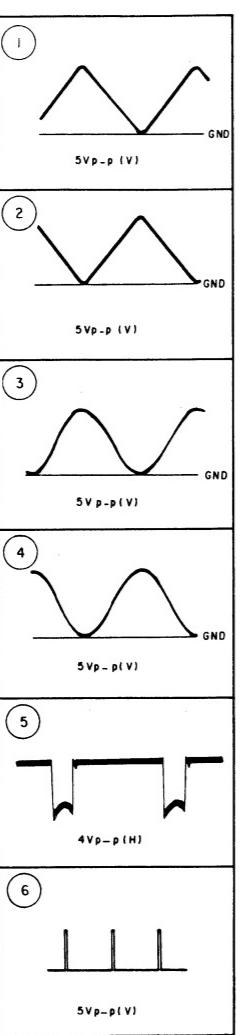
5 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30



—M1 Board—

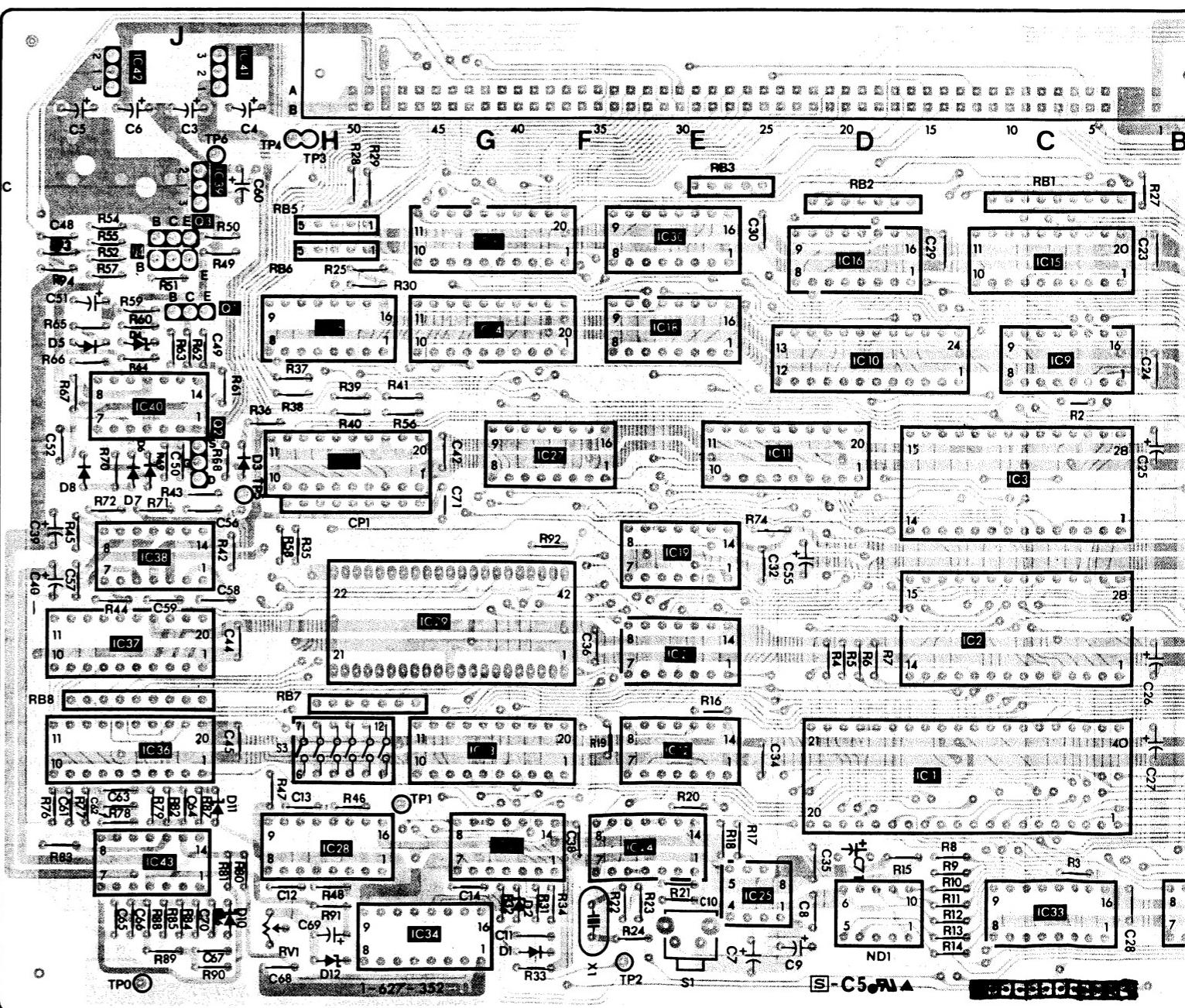
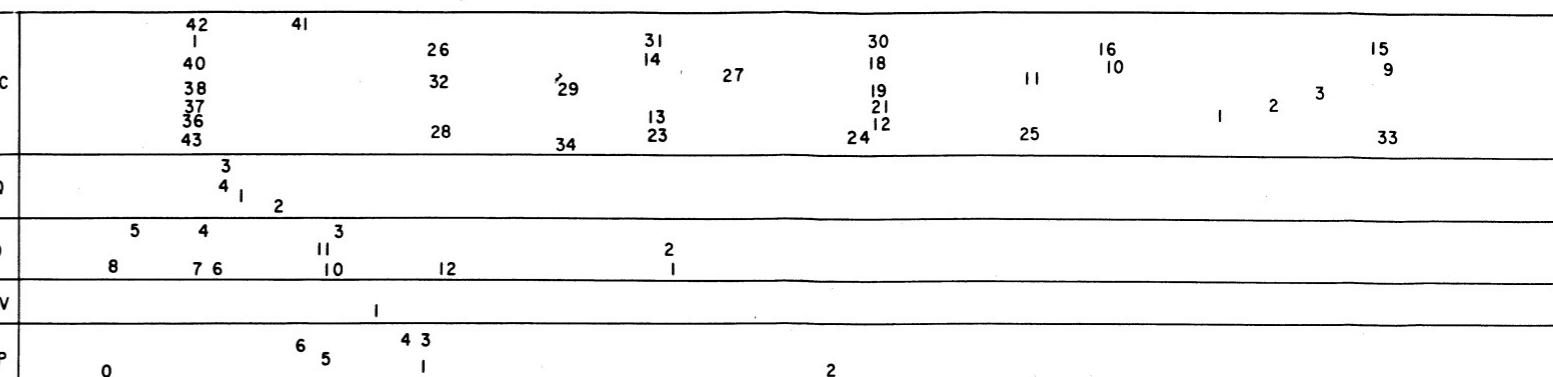
IC1	Z80-CPU
2	Z80-CTC
3	USART
4	PROGRAM ROM
5	WORKING RAM
6	WORKING RAM
7	DATA MEMORY
8	DATA MEMORY
9	DECORDER
10	I/O DECORDER
11	LATCH
12	CLOCK GENE
13	BUFFER
14	BUFFER
15	BUFFER
16	LOAD PULSE GENE
17	BUFFER
18	BUFFER
19	ANG GATE
20	OR GATE
21	OR GATE
22	NAND GATE
23	SCHMITT INV.
24	SCHMITT INV.
25	RESET IC
26	RS422A INTERFACE
27	DATA SELECTOR
28	PLL
29	ADDRESS COUNTER
30	STATUS HOLD
31	CLAMP PULSE GENE/GATE
32	A/D CONVERTER
33	SEQUENT DRIVER
34	D/A CONVERTER
35	DEGAUSS DRIVE GENE
36	COMPENSATION ROM
37	COMPENSATION WAVE GENE
38	QUAD OP AMP
39	-5V REG
40	QUAD OP AMP
41	12V REG
42	-12V REG
43	QUAD OP AMP
Q1	AGC
2	SWITCHER
3	INVERTER
4	INVERTER
D1	PROTECT
2	PROTECT
3	PROTECT
4	REF VOLT
5	RECTIFIER
6	PEAK HOLD
7	CLAMPER
8	CLAMPER
9	DISCHARGE
10	4.7V LIMITTER
11	4.7V LIMITTER
12	4.7V REGULAT

—M1 Board—



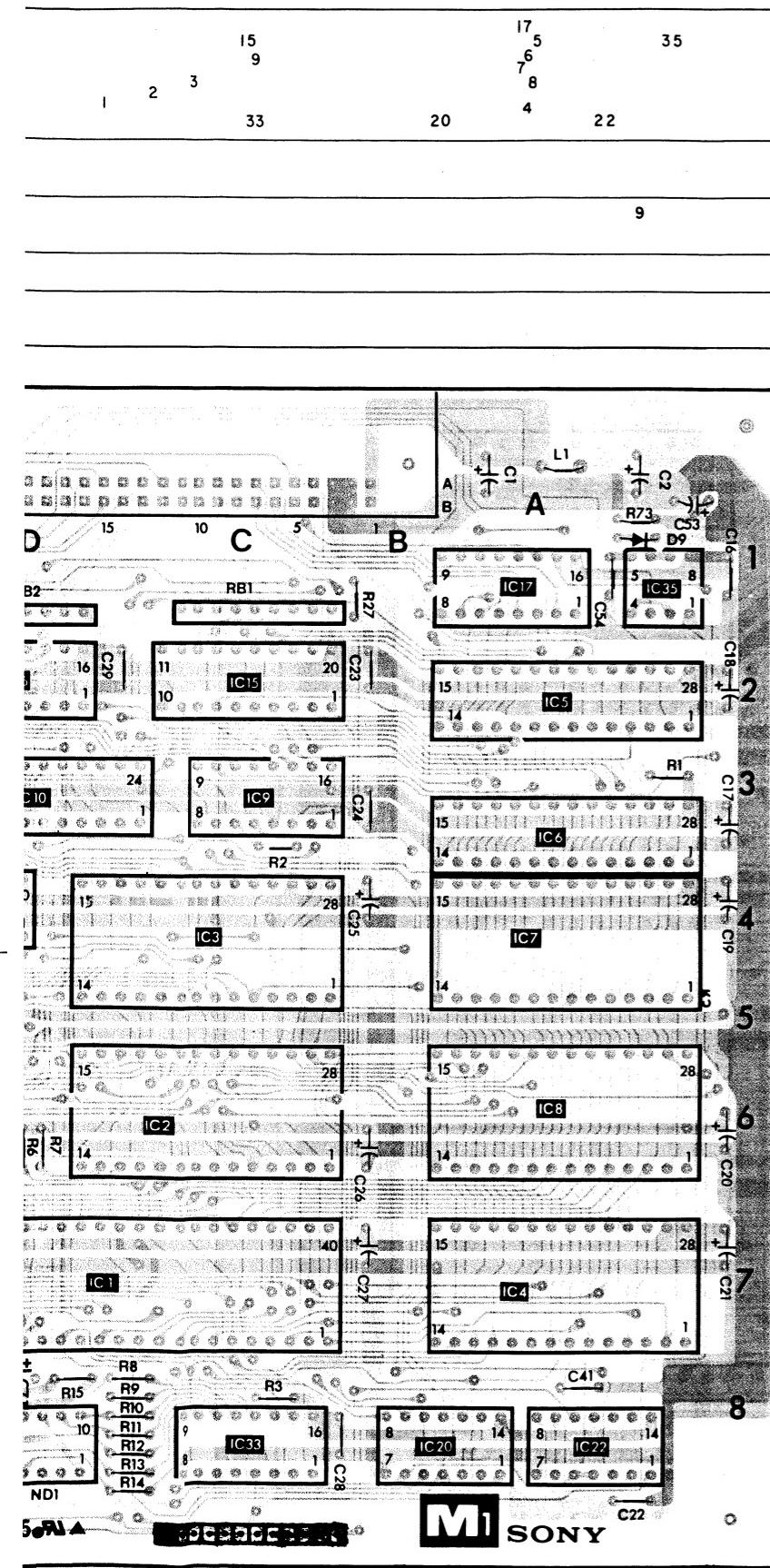
**M1** (CPU)

**M1 BOARD—** (DDM-2801C ; Serial No. up-to 2,000,005) (DDM-2801C2 ; Serial No. up-to 2,000,003)  
(DDM-2802C ; Serial No. 10,001—10,003) (DDM-2802C2 ; Serial No. up-to 2,000,001)



M1

1,003)  
1,001)



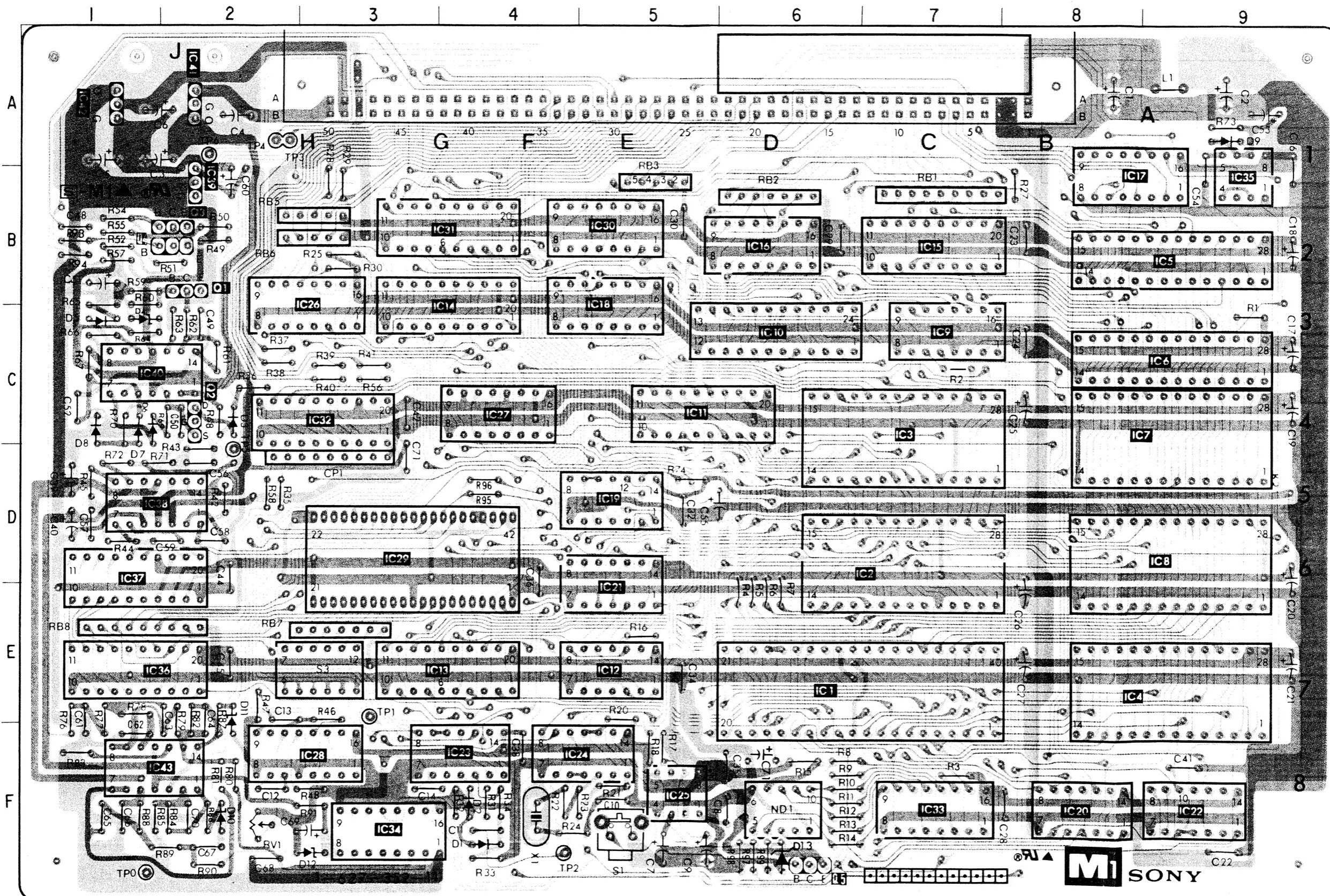
M1 (CPU)

(CPU)

-M Board-

—M1 BOARD— (DDM-2801C; Serial No. 2,000,006–2,000,039) (DDM-2801C2; Serial No. 2,000,004–2,000,049)  
(DDM-2802C; Serial No. 2,000,001–2,000,015) (DDM-2802C2; Serial No. 2,002,001–2,000,006)

- : Pattern from the side which enables seeing
- : Pattern of the rear side.



**M** SONY

**M1**

(CPU, CONTROL LOGIC)

**-M1 BOARD-** (DDM-2801C; Serial No. 2,000,006 and higher) (DDM-2801C2; Serial No. 2,000,004 and higher)  
 (DDM-2802C; Serial No. 2,000,001 and higher) (DDM-2802C2; Serial No. 2,000,002 and higher)

• : Pattern from the side which enables seeing  
 • : Pattern of the rear side.

**-M1 BOARD-**

IC
IC1 E-6
IC2 D-7
IC3 C-7
IC4 E-9
IC5 B-9
IC6 C-9
IC7 C-9
IC8 D-9
IC9 C-7
IC10 C-6
IC11 C-5
IC12 E-5
IC13 E-4
IC14 B-3
IC15 B-7
IC16 B-6
IC17 A-8
IC18 B-5
IC19 D-5
IC20 F-8
IC21 E-5
IC22 F-9
IC23 F-4
IC24 F-4
IC25 F-5
IC26 B-3
IC27 C-4
IC28 F-3
IC29 D-3
IC30 B-5
IC31 B-4
IC32 C-3
IC33 F-7
IC34 F-3
IC35 A-9
IC36 E-1
IC37 D-1
IC38 D-1
IC39 B-2
IC40 C-1
IC41 A-2
IC42 A-1
IC43 F-1

**TRANSISTOR**

Q1 B-2
Q2 C-2
Q3 B-2
Q4 B-2
Q5 F-6

**DIODE**

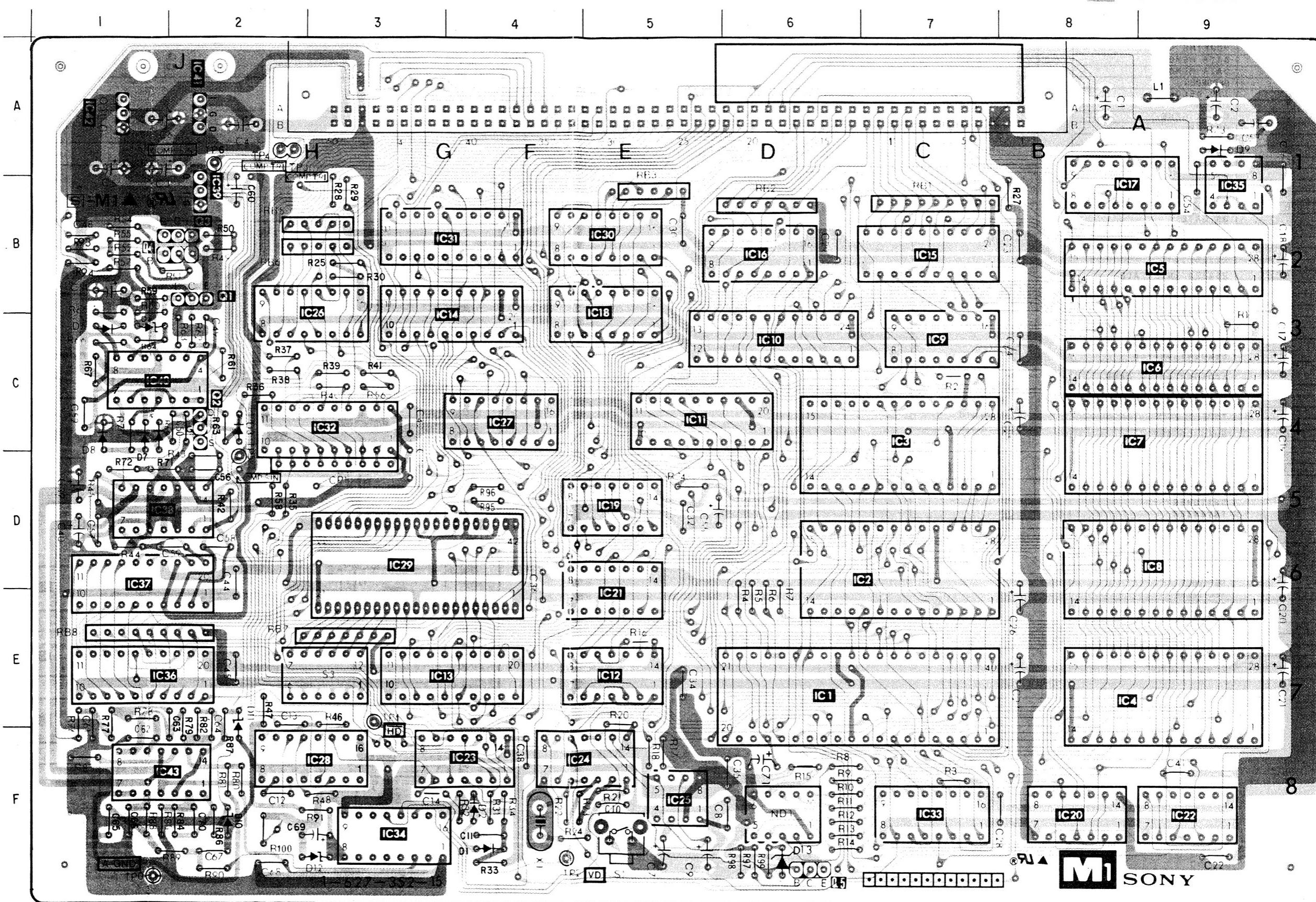
D1 F-4
D2 F-4
D3 C-2
D4 C-1
D5 C-1
D6 C-1
D7 C-1
D8 C-1
D9 A-9
D10 F-2
D11 E-2
D12 F-3
D13 F-6

**VARIABLE RESISTOR**

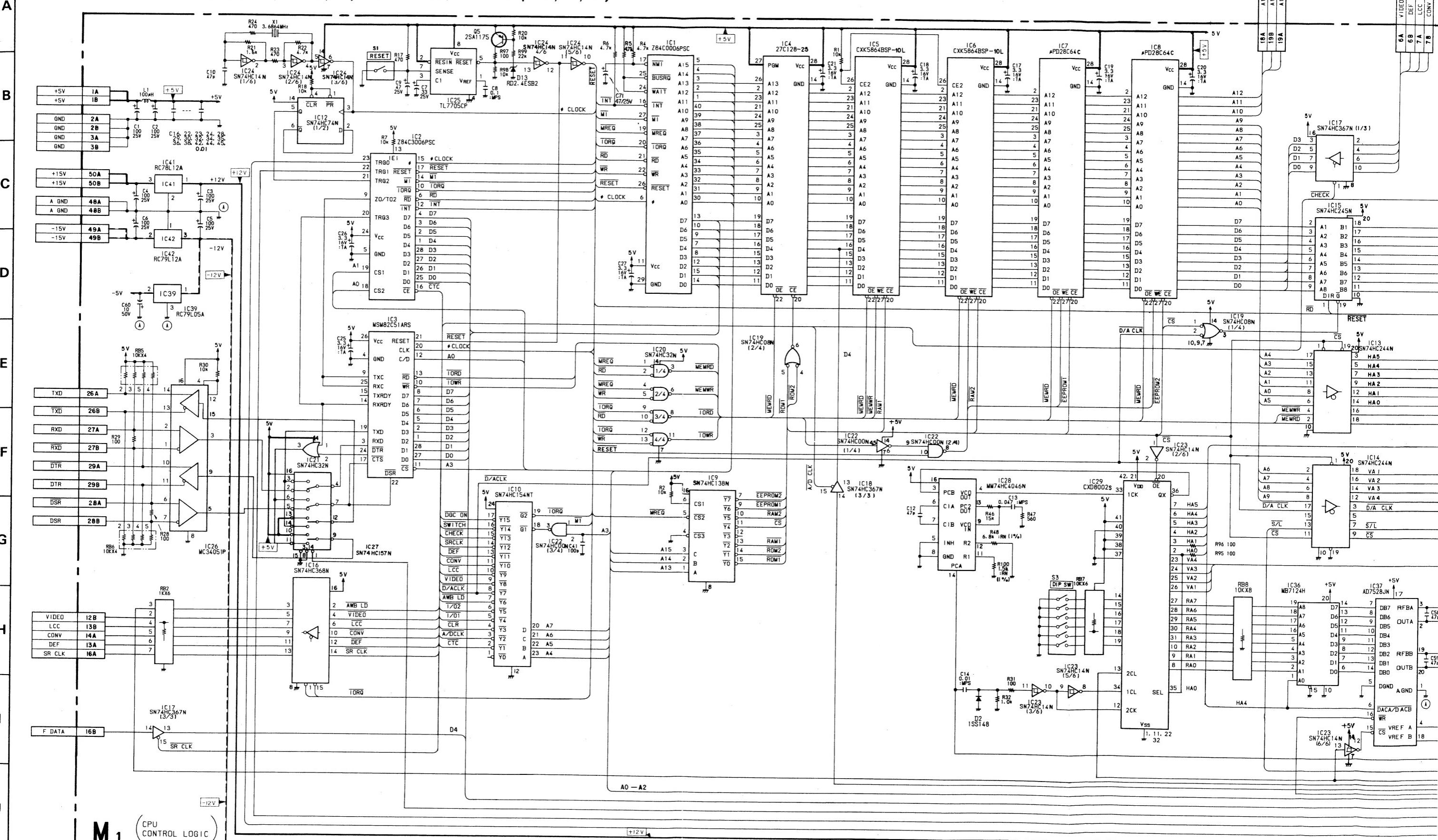
RV1 F-2
---------

**TEST POINT**

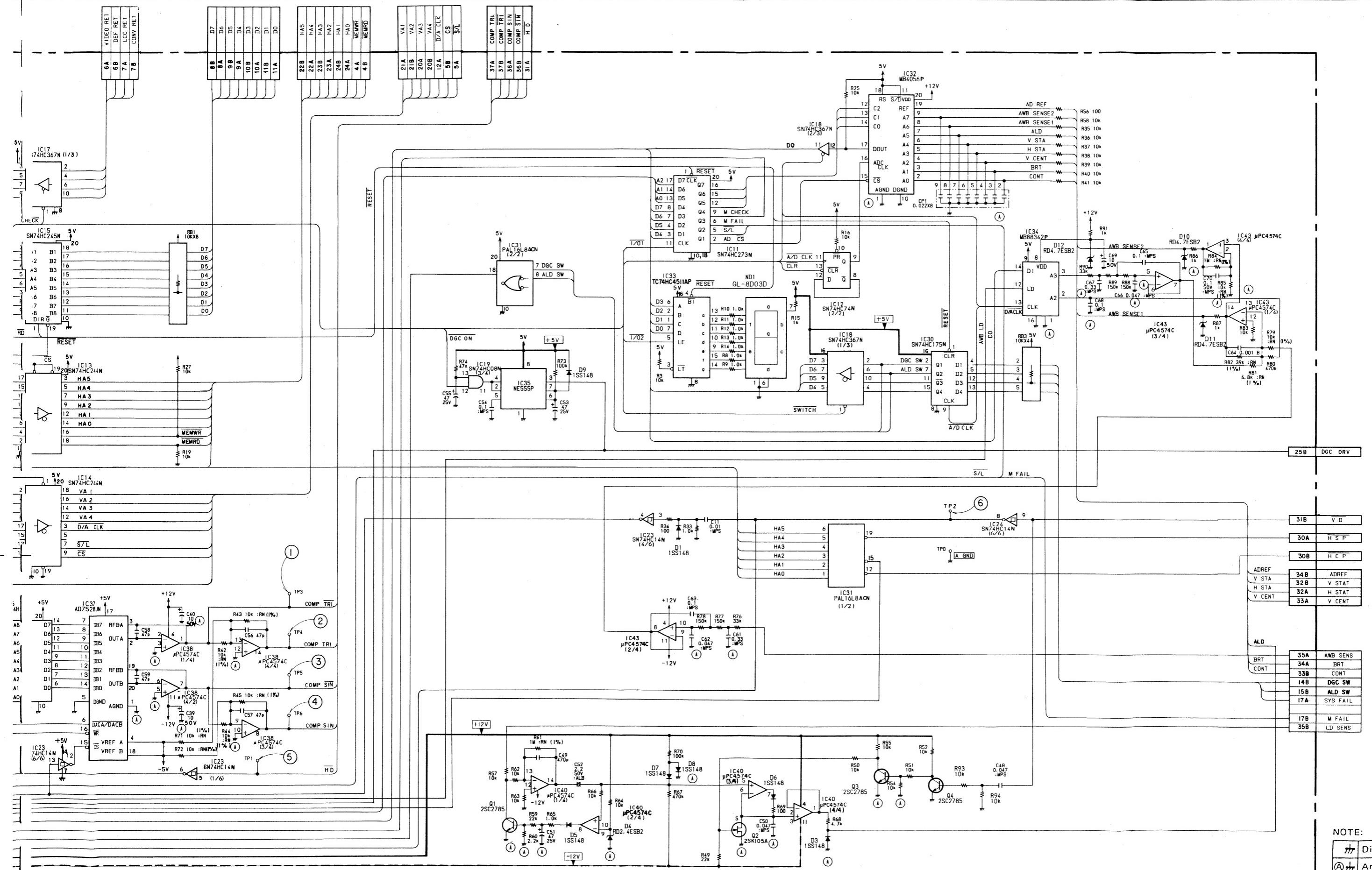
TP0 F-1
TP1 F-3
TP2 F-4
TP3 A-2
TP4 A-2
TP5 D-2
TP6 A-2



• M1 BOARD (DDM-2801C ; Serial No. up-to 2,000,005) (DDM-2801C2 ; Serial No. up-to 2,000,003)  
(DDM-2802C ; Serial No. 10,001–10,003) (DDM-2802C2 ; Serial No. up-to 2,000,001)

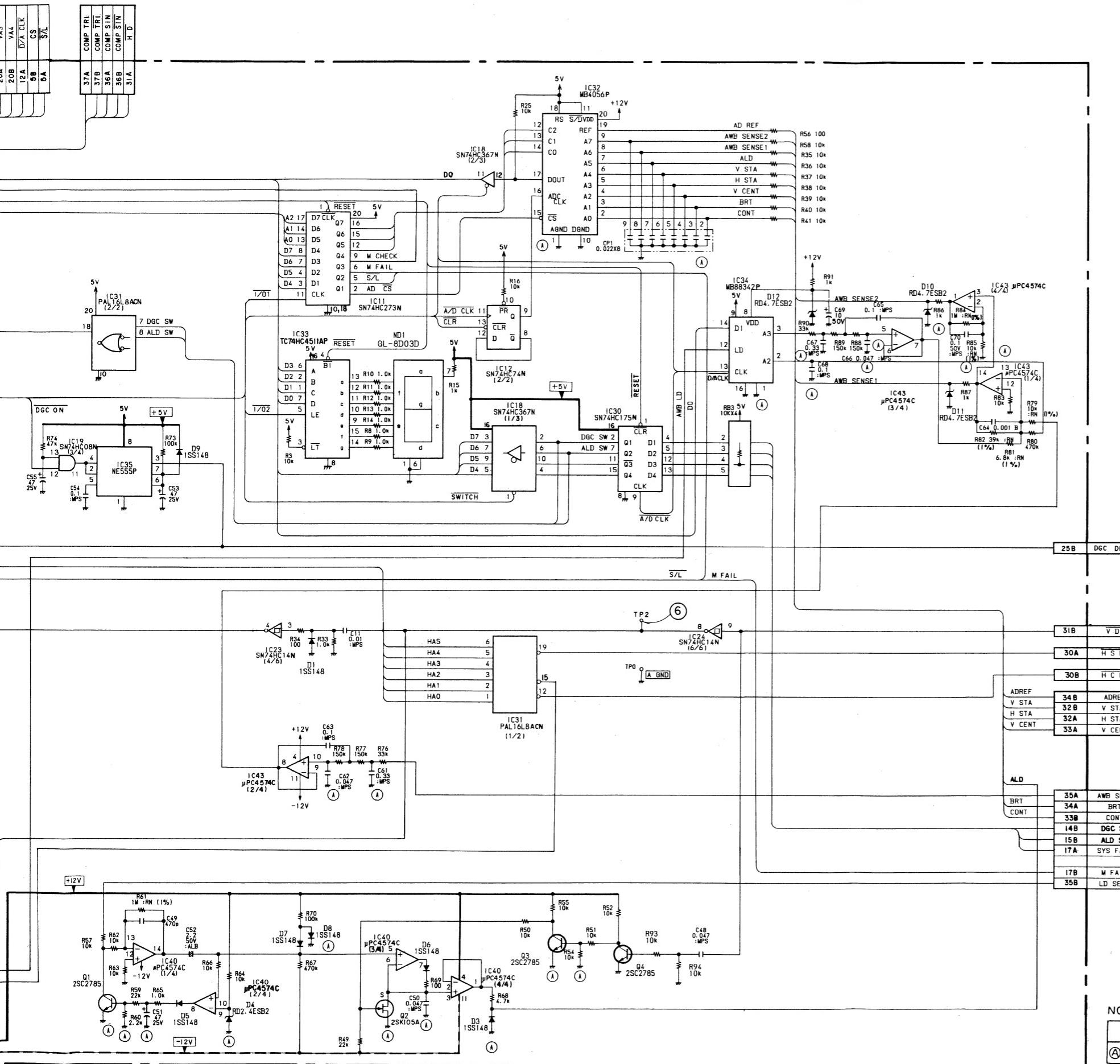


16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

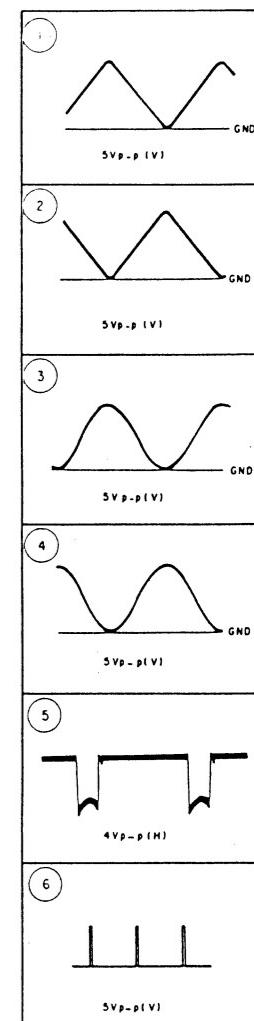


	Digital GND
	Analog GND

20 21 22 23 24 25 26 27 28 29 30



IC1	Z80-CPU
2	Z80-CTC
3	USART
4	PROGRAM ROM
5	WORKING RAM
6	WORKING RAM
7	DATA MEMORY
8	DATA MEMORY
9	DECODER
10	I/O DECODER
11	LATCH
12	CLOCK GENE
13	BUFFER
14	BUFFER
15	BUFFER
16	LOAD PULSE GENE
17	BUFFER
18	BUFFER
19	ANG GATE
20	OR GATE
21	OR GATE
22	NAND GATE
23	SCHMITT INV.
24	SCHMITT INV.
25	RESET IC
26	RS422A INTERFACE
27	DATA SELECTOR
28	PLL
29	ADDRESS COUNTER
30	STATUS HOLD
31	CLAMP PULSE GENE/GATE
32	A/D CONVERTER
33	SEQUENT DRIVER
34	D/A CONVERTER
35	DEGAUSS DRIVE GENE
36	COMPENSATION ROM
37	COMPENSATION WAVE GENE
38	QUAD OP AMP
39	-5V REG
40	QUAD OP AMP
41	12V REG
42	-12V REG
43	QUAD OP AMP
Q1	AGC
2	SWITCHER
3	INVERTER
4	INVERTER
5	SWITCHER
D1	PROTECT
2	PROTECT
3	PROTECT
4	REF VOLT
5	RECTIFIER
6	PEAK HOLD
7	CLAMPER
8	CLAMPER
9	DISCHARGE
10	4.7V LIMITTER
11	4.7V LIMITTER
12	4.7V REGULAT
13	ZENER DIODE



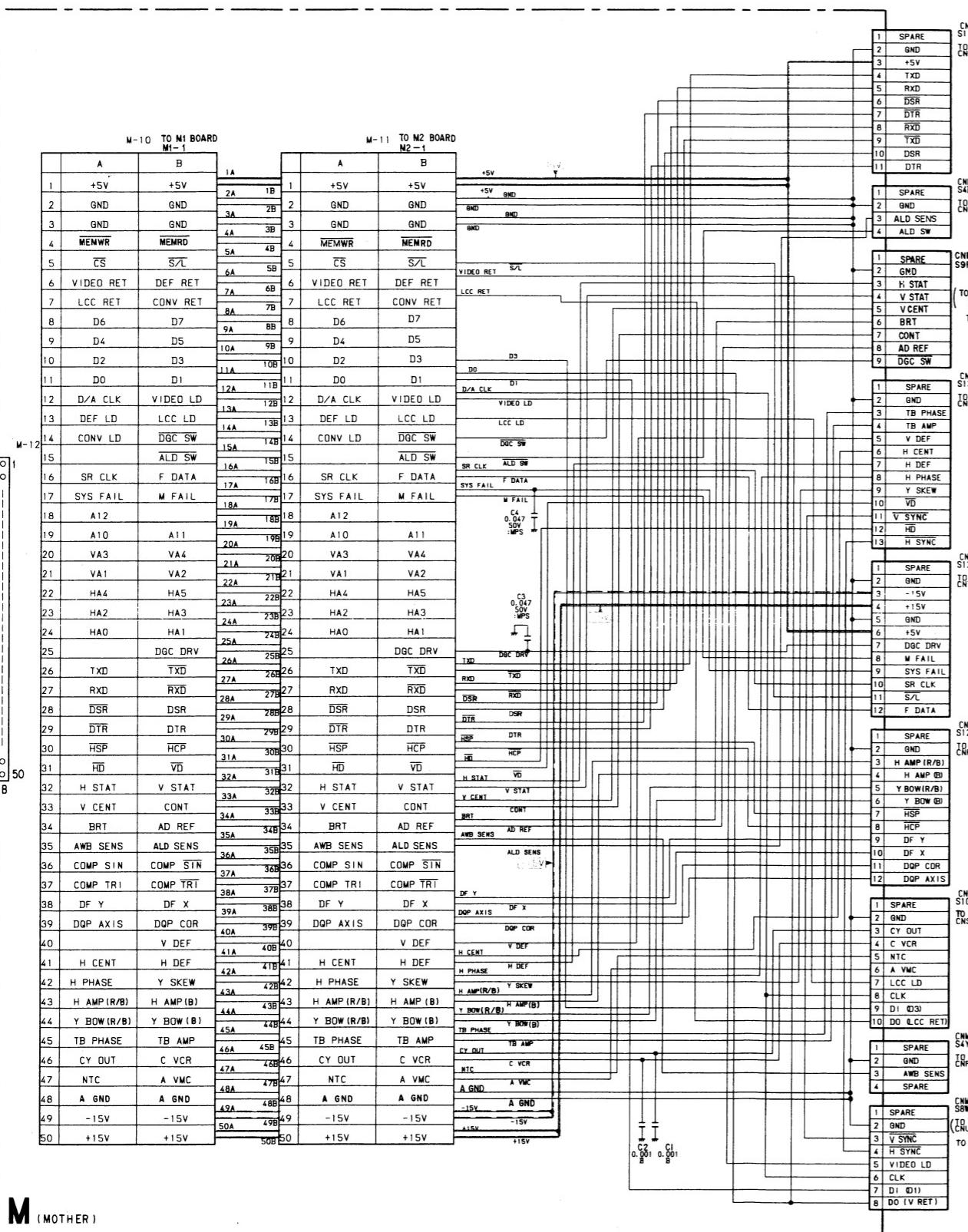
NOTE:

	Digital GND
	Analog GND

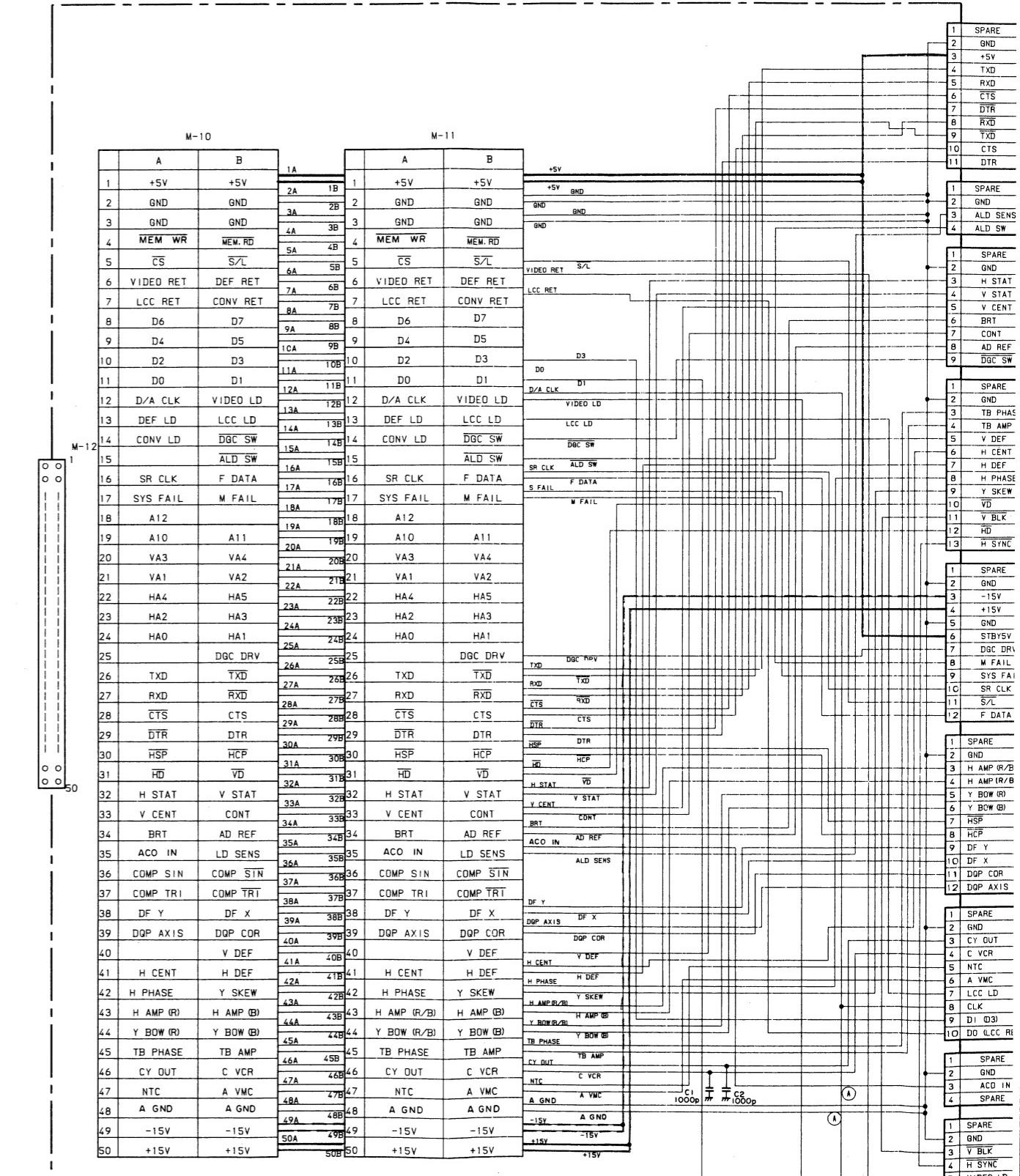
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

**M BOARD (DDM-2801C; Serial No. 2,000,006 and higher)**  
**(DDM-2802C; Serial No. 2,000,001 and higher)**  
**(DDM-2801C2; Serial No. 2,000,004 and higher)**  
**(DDM-2802C2; Serial No. 2,000,002 and higher)**

**M BOARD (DDM-2801C; Serial No. up-to 2,000,005)**  
**(DDM-2802C; Serial No. 10,001–10,003)**  
**(DDM-2801C2; Serial No. up-to 2,000,003)**  
**(DDM-2802C2; Serial No. up-to 2,000,001)**



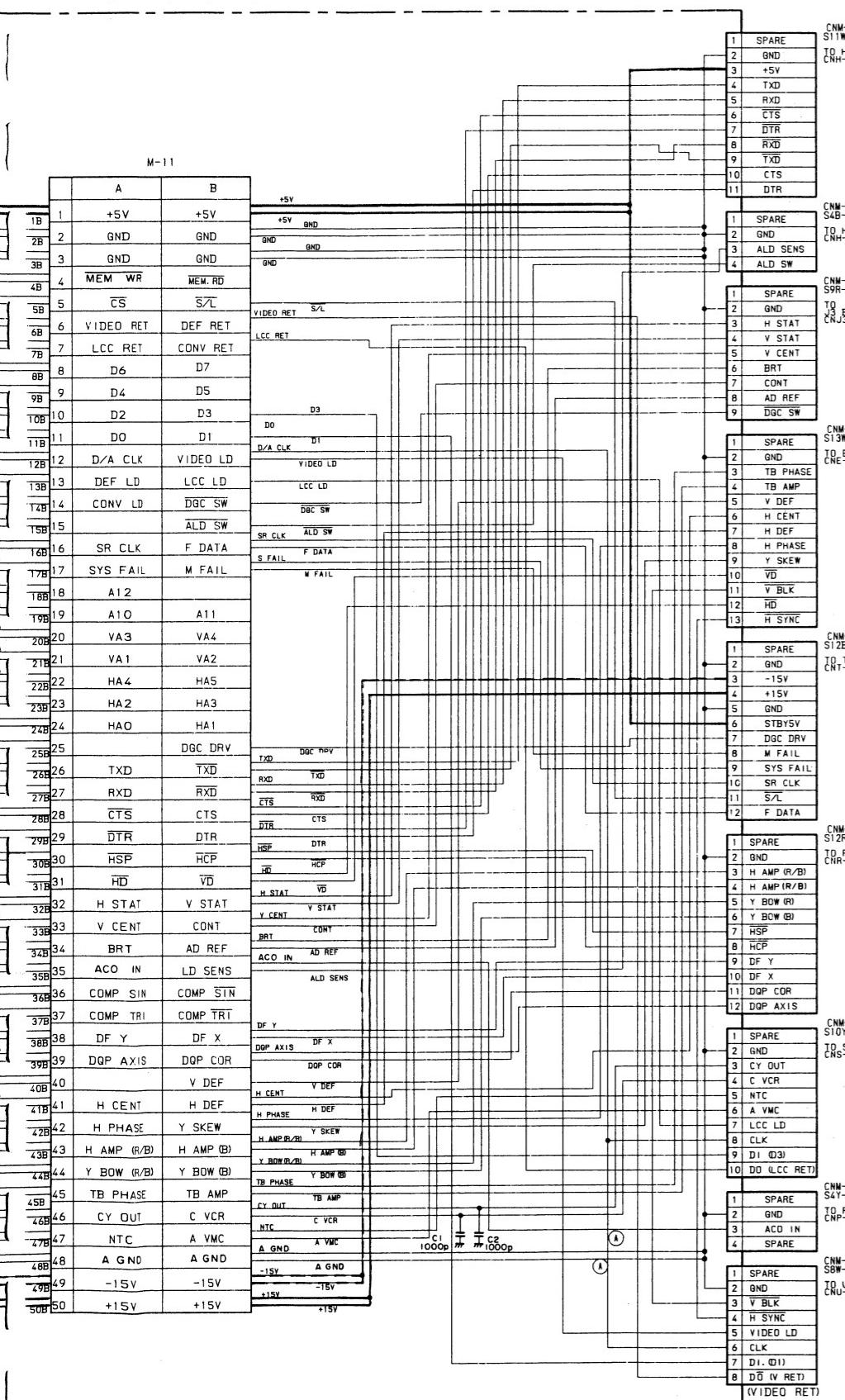
**M**  
(MOTHER)



**M**  
(MOTHER BOARD)

12 | 13 | 14 | 15 | 16 | 17 |

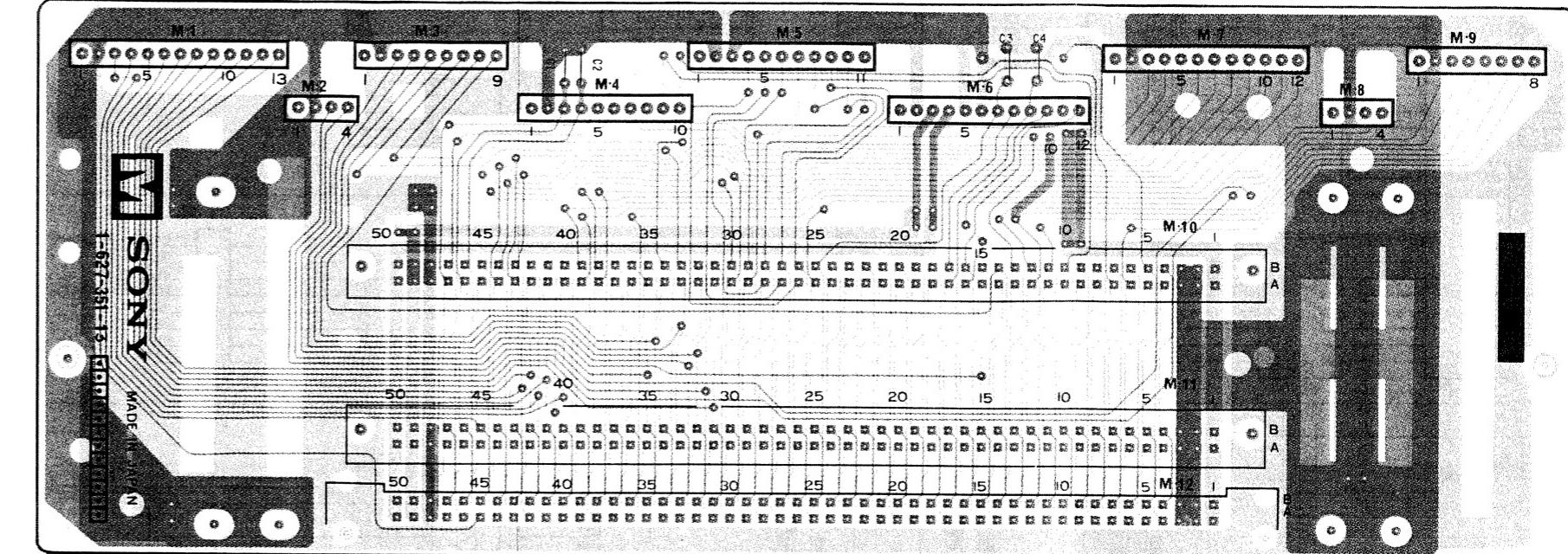
Serial No. up-to 2,000,005)  
Serial No. 10,001-10,003)  
Serial No. up-to 2,000,003)  
Serial No. up-to 2,000,001)



## M (MOTHER)

### -M BOARD-

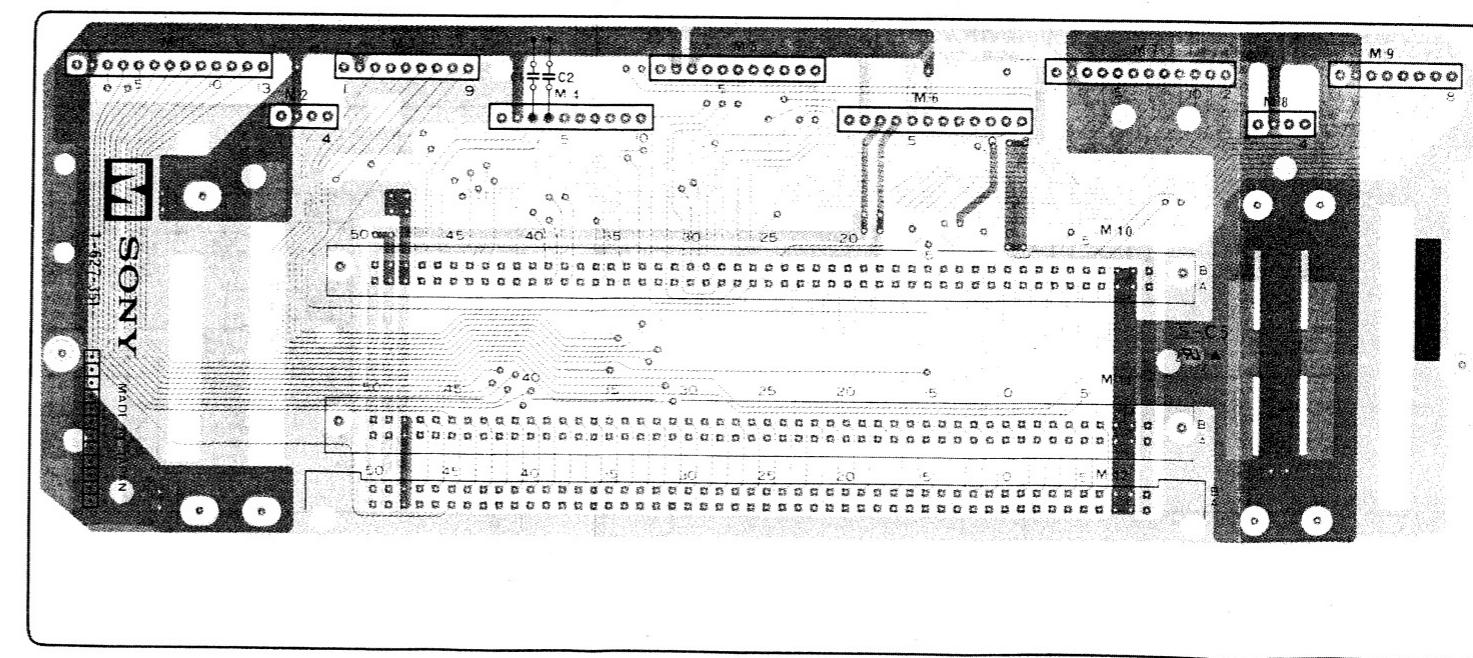
(DDM-2801C; Serial No. 2,000,006 and higher)  
(DDM-2802C; Serial No. 2,000,001 and higher)  
(DDM-2801C2; Serial No. 2,000,004 and higher)  
(DDM-2802C2; Serial No. 2,000,002 and higher)



• : pattern from the side which enables seeing.  
• : pattern of the rear side.

### -M1 BOARD-

(DDM-2801C; Serial No. 2,000,006 and higher)  
(DDM-2802C; Serial No. 2,000,001 and higher)  
(DDM-2801C2; Serial No. 2,000,004 and higher)  
(DDM-2802C2; Serial No. 2,000,002 and higher)

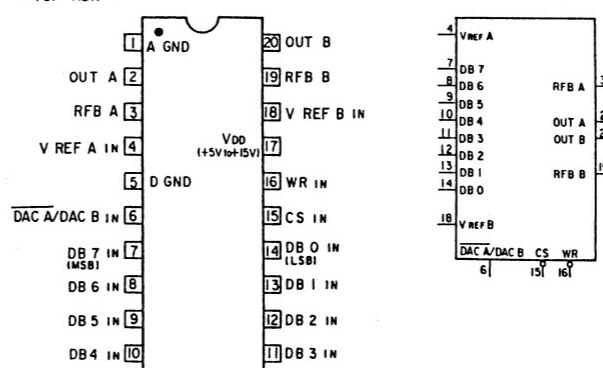


• : pattern from the side which enables seeing.  
• : pattern of the rear side.

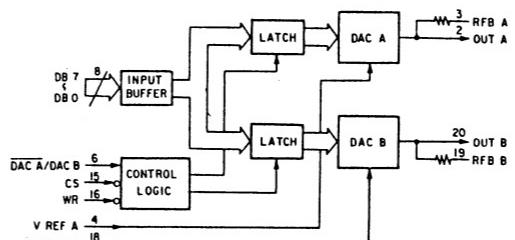
# M

## 5-4. SEMICONDUCTORS

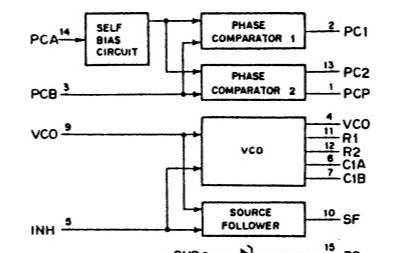
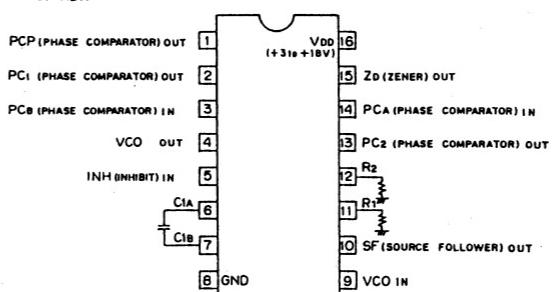
AD7528JN (ANALOG DEVICES)  
CMOS DUAL 8-BIT MULTIPLYING D/A CONVERTER WITH BUFFER  
— TOP VIEW —



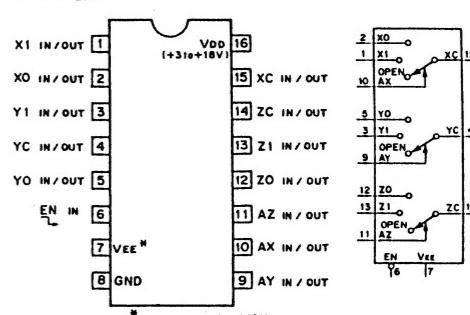
A GND : ANALOG GND  
CS : CHIP SELECT INPUT  
DAC A/DAC B : DAC SELECT INPUT  
DB7~DB0 : DIGITAL DATA INPUTS  
D GND : DIGITAL GND  
OUT A,OUT B : ANALOG SIGNAL OUTPUT  
RFB A,RFB B : REGISTER DAC FEEDBACK  
V REF A,V REF B : REFERENCE VOLTAGE INPUT  
WR : WRITE INPUT



CD4046BE (RCA)  
HD14046BP (HITACHI)  
MC14046BCP (MOTOROLA)  
MC14046BF (MOTOROLA) FLAT PACKAGE  
TC4046BP (TOSHIBA)  
C-MOS PHASE LOCKED LOOP  
— TOP VIEW —

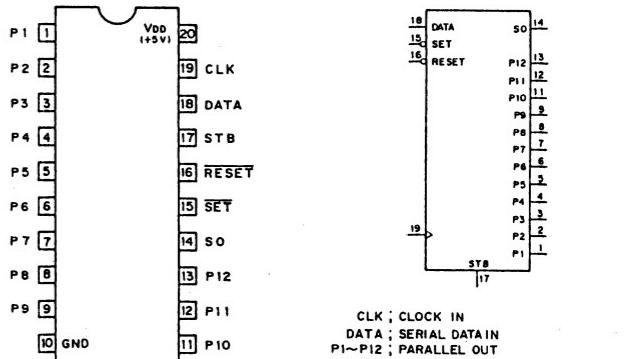


CD4053BE (RCA)  
HD14053BP (HITACHI)  
MB84053B (FUJITSU)  
MC14053BCP (MOTOROLA)  
MSM4053 (OKI)  
TC4053BF (TOSHIBA) FLAT PACKAGE  
TC4053BFH (TOSHIBA) FLAT PACKAGE  
TC4053BP (TOSHIBA)  
TC4053BPHB (TOSHIBA)  
uPD4053BC (NEC)  
uPD4053BG (NEC) FLAT PACKAGE  
C-MOS 2 CHANNEL MULTIPLEXER/DEMULTIPLEXER  
— TOP VIEW —



CONT. INPUTS	ON
0; LOW LEVEL	0 0 CHANNEL
1; HIGH LEVEL	0 1 1
X; DON'T CARE,	1 X OPEN

CXD1067P (SONY)  
C-MOS 12-BIT SERIAL TO PARALLEL CONVERTER

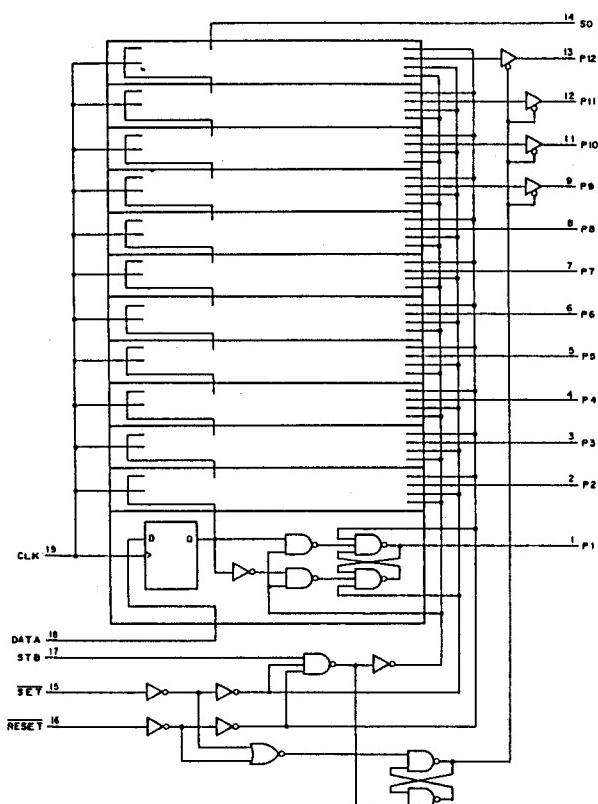


CLK : CLOCK IN  
DATA : SERIAL DATA IN  
P1~P12 : PARALLEL OUT  
RESET : RESET IN  
SET : SET IN  
SO : SERIAL DATA OUT  
DELAYED 12CLOCKS FROM INPUT  
STB : STROBE IN

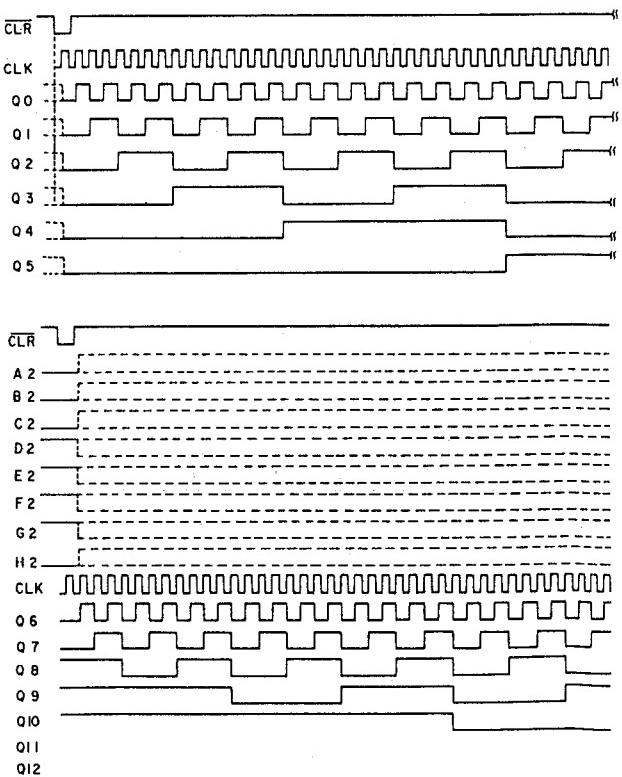
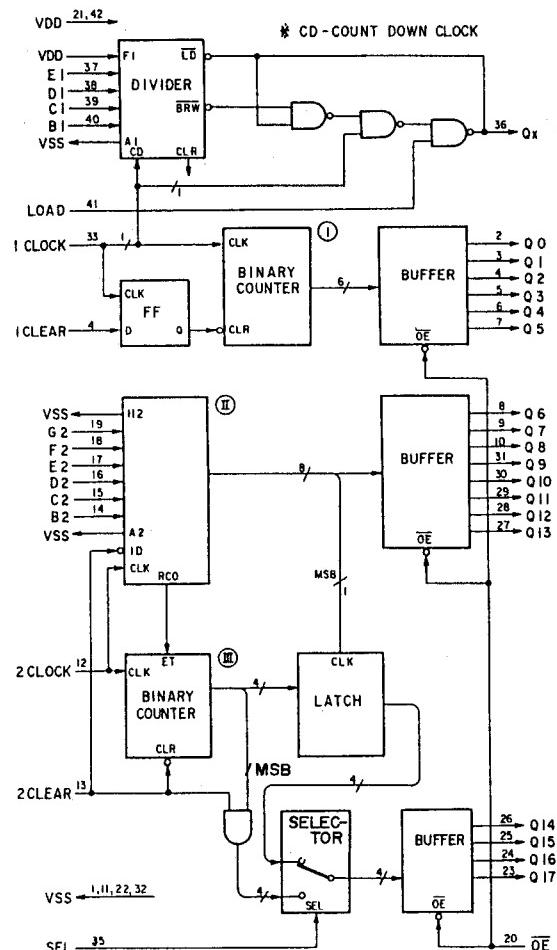
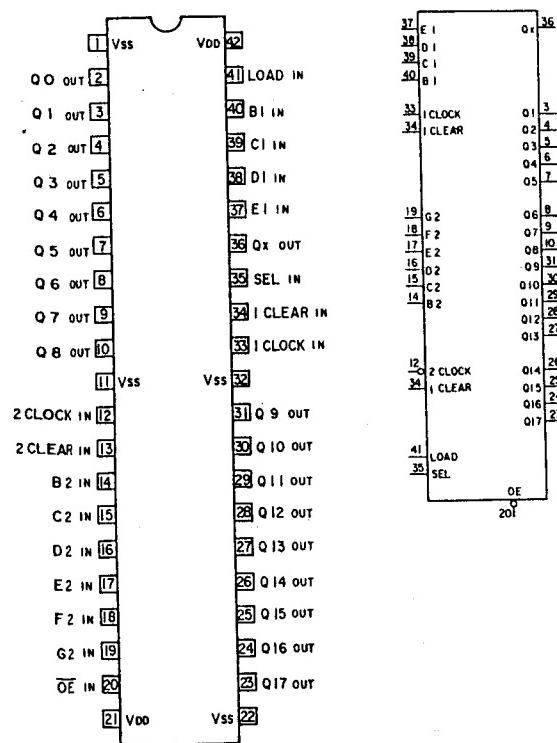
CONTROL INPUTS	PARALLEL OUTPUTS
SET	P1~P8
RESET	P9~P12
STB	P1~P12
1 : HIGH	1 HI-Z
0 : LOW	0 HI-Z
HI-Z	VALID VALID
1 : HIGH	FORMER FORMER STATE STATE

1 : HIGH  
0 : LOW  
HI-Z : HIGH IMPEDANCE

**DDM-2801C/2802C  
DDM-2801C2/2802C2**

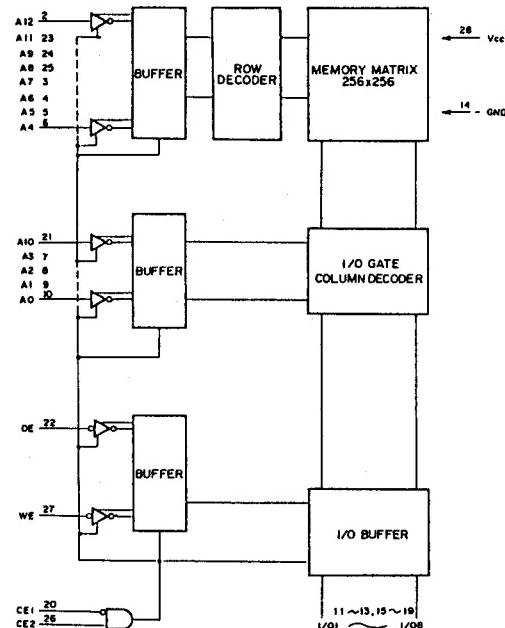
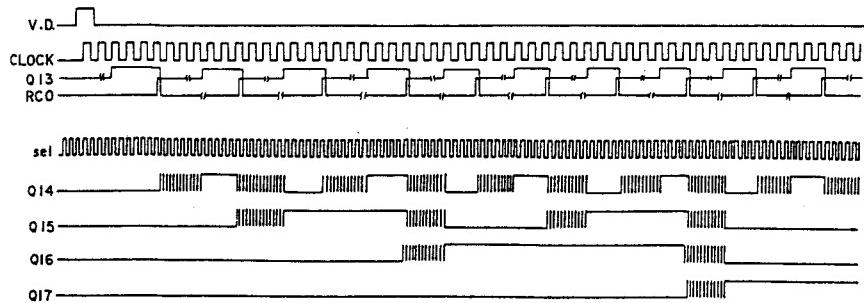


CXD8002S (SONY)  
— TOP VIEW —



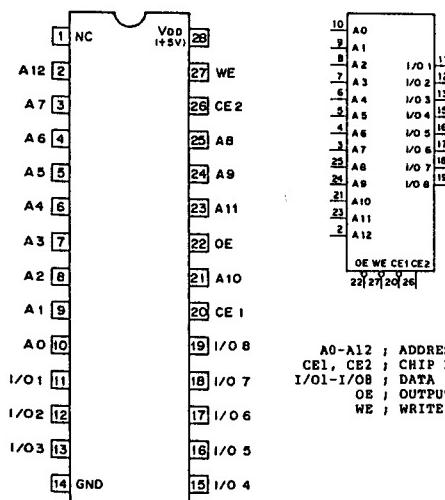
# DDM-2801C/2802C

## DDM-2801C2/2802C2



CXK5864ASP-10L (SONY) (ACCESS TIME = 100nS)  
 CXK5864ASP-70L (SONY) (ACCESS TIME = 70nS)  
 CXK5864BSP-10L (SONY) (ACCESS TIME = 100nS)

C-MOS 8192-WORDx8-BIT STATIC RAM  
 — TOP VIEW —



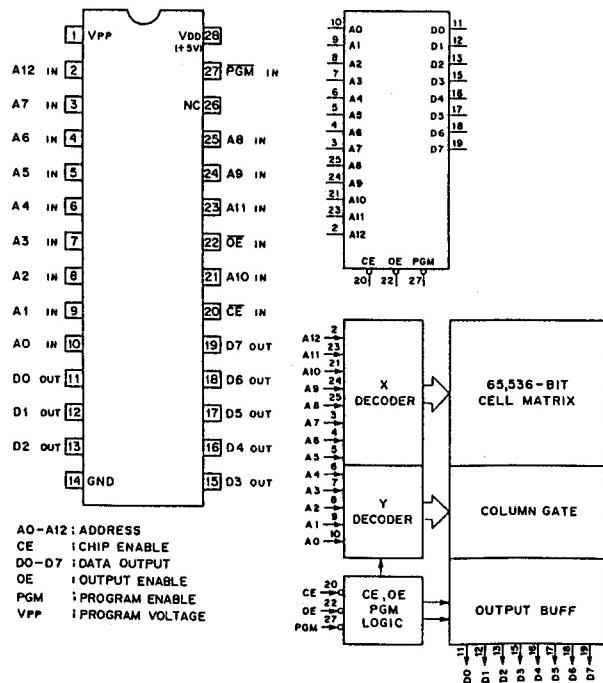
MODE				I/O TERMINAL
1	X	X	X	NONE SELECT HIGH IMPEDANCE
X	0	X	X	NOT SELECT HIGH IMPEDANCE
0	1	1	1	OUTPUT DISABLE HIGH IMPEDANCE
0	1	0	1	READ OUTPUT DATA
0	1	X	0	WRITE INPUT DATA

0; LOW LEVEL  
 1; HIGH LEVEL  
 X; DON'T CARE

HN27C64G-20 (HITACHI) (ACCESS TIME = 200 nS)  
 MBM27C64-20 (FUJITSU) (ACCESS TIME = 200 nS)  
 MBM27C64-25 (FUJITSU) (ACCESS TIME = 250 nS)  
 MBM27C64-30 (FUJITSU) (ACCESS TIME = 300 nS)  
 MSM27C64-25 (OKI) (ACCESS TIME = 250 nS)

C-MOS 84K (8K-8) ERASABLE PROM WITH 3-STATE OUTPUTS

— TOP VIEW —

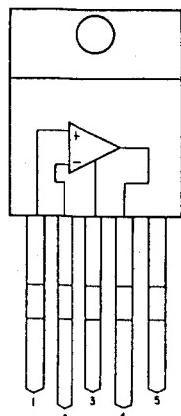


An	CE	OE	PGM	V <sub>PP</sub>	D <sub>n</sub>	FUNCTION
An 0	0	1	+5V	D OUT		READ
An 0	1	1	+5V	HI-Z		OUTPUT DISABLE
An 0	0	0	+5V	HI-Z		OUTPUT DISABLE
X 1	X	X	+5V	HI-Z		STANDBY
An 0	X	1	+21V	DIN		PGM
An 0	0	1	+21V	D OUT		PGM VERIFY
X 1	X	X	+21V	HI-Z		PGM INH

0; LOW LEVEL  
 1; HIGH LEVEL  
 X; DON'T CARE  
 HI-Z; HIGH IMPEDANCE

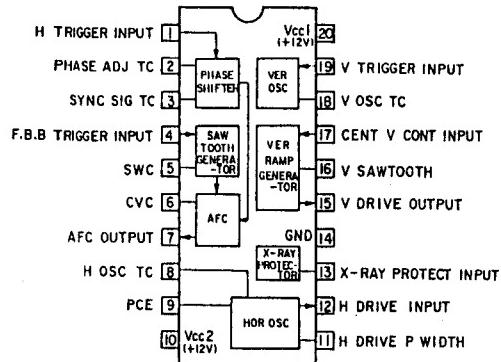
LA6500 (SANYO)  
AF POWER AMP

- SIDE VIEW -



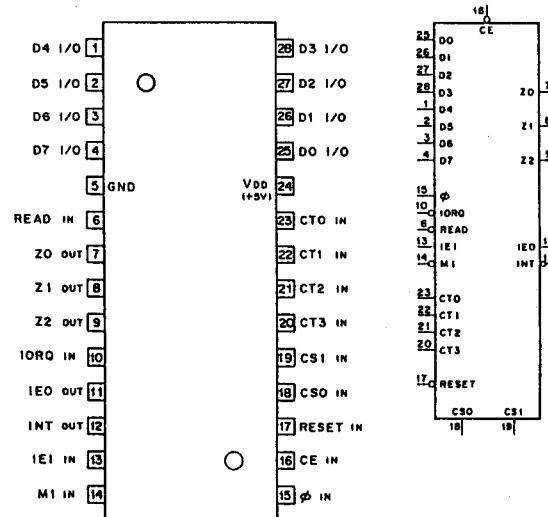
LA7850 (SANYO)  
CRT DISPLAY DEFLECTION SIGNAL PROCESSING

- TOP VIEW -



CVC: COMPARATOR VOLTAGE CAPACITOR  
PCE: PEAK CURRENT EQUALIZER  
SWC: SAWTOOTH WAVE CAPACITOR  
TC: TIME CONSTANT

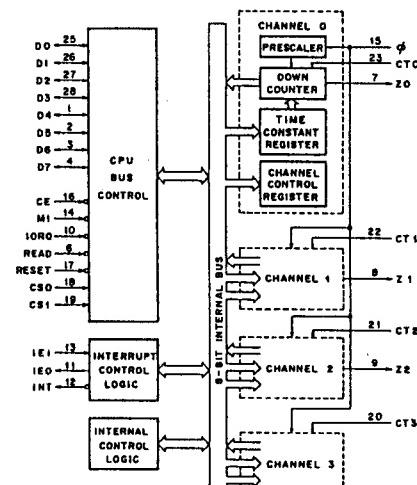
LH5082A (SHARP)  
TMPZ84C30AP (TOSHIBA)  
TMPZ84C30AP-6 (TOSHIBA)  
Z84C3006PSC (ZILOG)  
Z84C30-8PS (ZILOG)  
C-MOS COUNTER/TIMER CIRCUIT  
— TOP VIEW —



φ : SYSTEM CLOCK  
CE : CHIP ENABLE  
CS0, CS1 : CHANNEL SELECT  
CT0-CT3 : EXTERNAL CLOCK/TIMER TRIGGER  
D0-D7 : 3-STATE DATA INPUT/OUTPUT  
IEI : INTERRUPT ENABLE INPUT  
IEO : INTERRUPT ENABLE OUTPUT  
INT : INTERRUPT REQUEST (OPEN DRAIN)  
IORD : I/O REQUEST  
M1 : MACHINE CYCLE 1  
READ : READ CYCLE STATUS  
Z0-Z2 : ZERO COUNT/TIME OUT

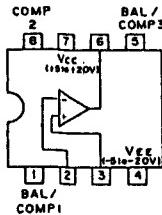
CHANNEL SELECT FUNCTION		
CS1	CS0	SELECTED CHANNEL
0	0	0
0	1	1
1	0	2
1	1	3

0: LOW LEVEL  
1: HIGH LEVEL

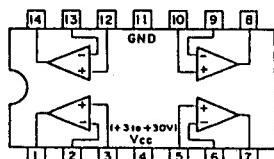


# DDM-2801C/2802C DDM-2801C2/2802C2

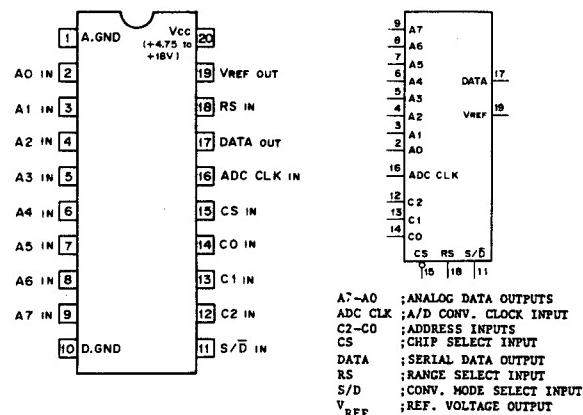
LM318P (TI)  
uPC318C (NEC)  
HIGH-PERFORMANCE OPERATIONAL AMPLIFIER  
— TOP VIEW —



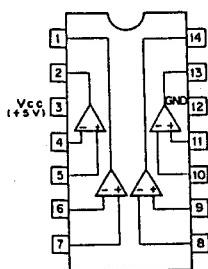
CA324 (RCA)  
IR3702 (SHARP)  
LM324 (NS)  
LM324N (TI)  
MB3614 (FUJITSU)  
uPC324C (NEC)  
uPC324G2 (NEC) FLAT PACKAGE  
QUAD. OP AMPLIFIER  
— TOP VIEW —



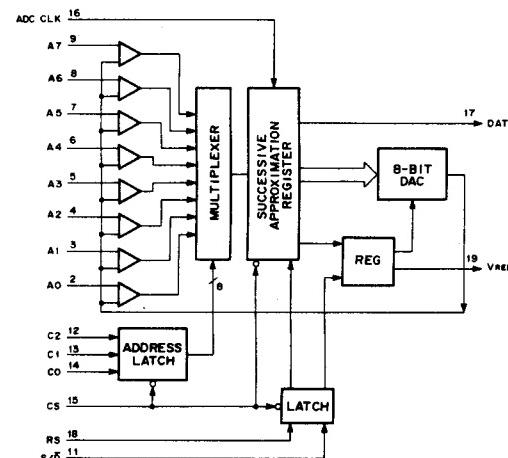
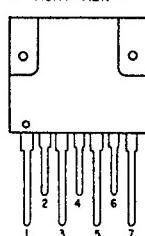
MB4056 (FUJITSU)  
8-BIT A/D CONVERTER  
— TOP VIEW —



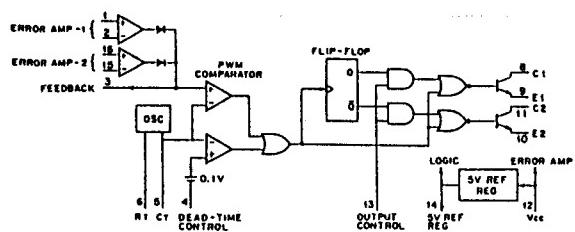
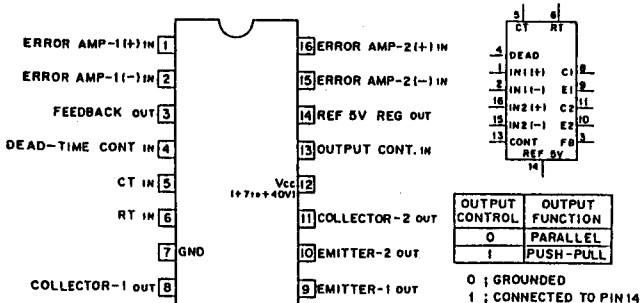
LM339 (NSC)  
MB4204 (FUJITSU)  
uPC339C (NEC)  
uPC339G2 (NEC) FLAT PACKAGE  
COMPARATOR  
— TOP VIEW —



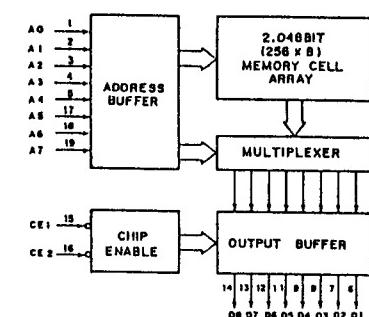
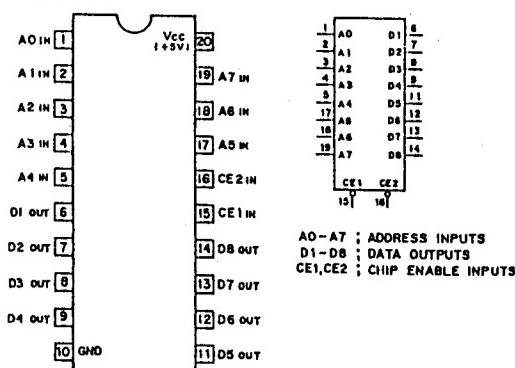
MA1050 (SHINDENGEN)  
POWER SUPPLIES  
— FRONT VIEW —



MB3759 (FUJITSU)  
MB3769P (FUJITSU)  
TL494CN (TI)  
TL494CNS (TI) FLAT PACKAGE  
uPC494C (NEC)  
PWM POWER CONTROL  
— TOP VIEW —

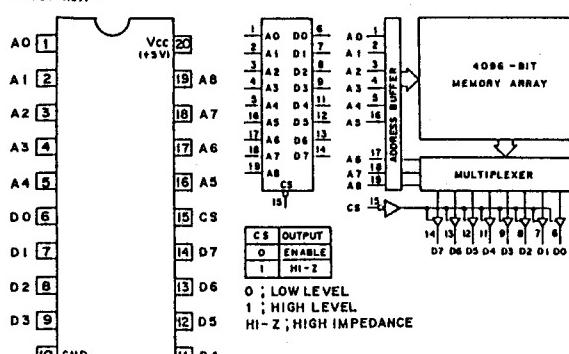


MB7118E (FUJITSU) (ACCESS TIME = 45nS)  
MB7118H (FUJITSU) (ACCESS TIME = 35nS)  
2048-BIT (256x8) PROM  
— TOP VIEW —



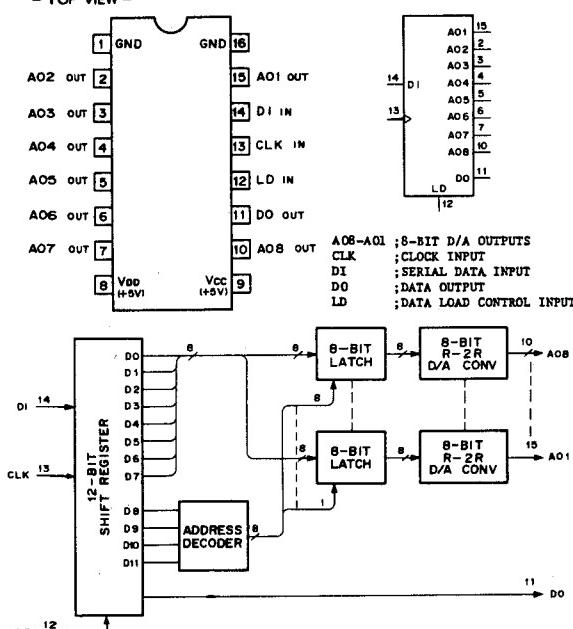
**DDM-2801C/2802C  
DDM-2801C2/2802C2**

**M87124 (FUJITSU)**  
**M87124EZ (FUJITSU)**  
**M87124HZ (FUJITSU)**  
**4096-BIT (512x8) PROM WITH 3-STATE OUTPUT**



**A0 - A8**: ADDRESS INPUTS  
**D0 - D7**: DATA OUTPUTS  
**CS**: CHIP SELECT INPUT

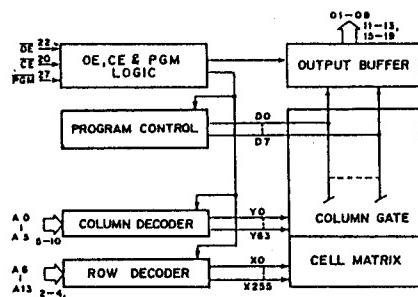
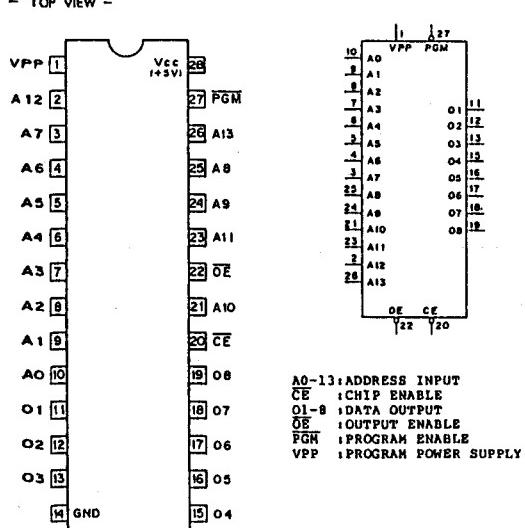
MB88342 (FUJITSU)  
C-MOS 8-BIT D/A CONVERTER  
-TOP VIEW-



MBM27C128-20 (FUJITSU) (ACCESS TIME = 200ns)  
MBM27C128-25 (FUJITSU) (ACCESS TIME = 250ns)

CMOS 121.033-BIT EEPROM

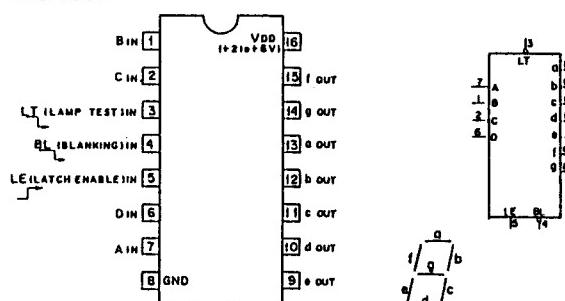
CMOS 131.072-1



TERMINAL		DATA OUTPUT	CE	OE	PGH	VPP
MODE						
READ		DATA OUT	0	0	1	+5V
OUTPUT DISABLE		HIGH IMPEDANCE	0	1	1	+5V
OUTPUT ENABLE		HIGH IMPEDANCE	0	0	0	+5V
STANDBY		HIGH IMPEDANCE	1	X	X	+5V
PROGRAM		DATA IN	0	1	0	+21V
PROGRAM VERIFY		DATA OUT	0	0	1	+21V
PROGRAM INITIATE		HIGH IMPEDANCE	1	X	X	+21V

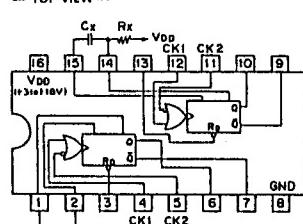
0:LOW LEVEL  
1:HIGH LEVEL  
X:DON'T CARE

**MC14511BCP (MOTOROLA)**  
**TC4511BP (TOSHIBA)**  
**TC74HC4511F (TOSHIBA) FLAT PACKAGE**  
**TC74HC4511P (TOSHIBA)**  
**TP4511BN (TI)**  
**C-MOS BCD TO 7 SEGMENT LATCII/DECODER/DRIVER**  
— TOP VIEW —



**U;LOW  
1;HIGH  
X;LOW OR HIGH**

**F4528BPC (FSC)  
M4528BP [MITSUBISHI]  
MC14528BCP (MOTOROLA)  
TC4528BB (TOSHIBA) FLAT PACKAGE  
TC4528BBFH (TOSHIBA) FLAT PACKAGE  
TC4528BP (TOSHIBA)  
TC4528BPHB (TOSHIBA)  
uPD4528BC (NEC)  
uPD4528C (NEC)  
C-MOS RETRIGGERRABLE/RESETTABLE MMV  
— TOP VIEW —**



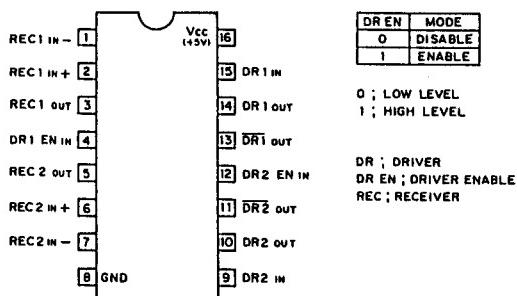
INPUTS	OUTPUTS			
CK1	CK2	Rd	Q	Q'
1	1	I	1	0
1	0	I	0	1
0	1	I	0	1
X	X	0	0	1

K2  
 { OUTPUT PULSE WIDTH Q OR  $\bar{Q}$   
 • (FOR  $C_x \geq 0.01\mu F$  USE FORMULA)  
 $PW = 0.2 \cdot R_x \cdot C_x \cdot \ln(VDD - GND)$   
 • (FOR  $C_x < 0.01\mu F$  USE DATA BOOK)

# DDM-2801C/2802C DDM-2801C2/2802C2

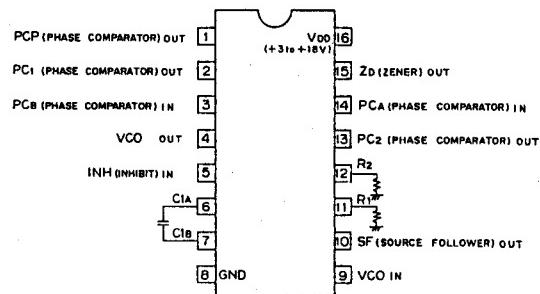
MC34051P (MOTOROLA)  
RS-422 DRIVER/RECEIVER

- TOP VIEW -

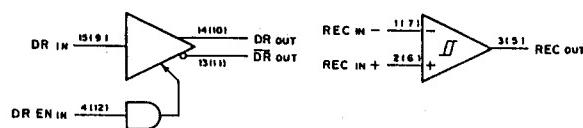


MM74HC4046 (NSC)  
C-MOS PHASE LOCKED LOOP

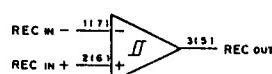
- TOP VIEW -



DRIVER CIRCUIT



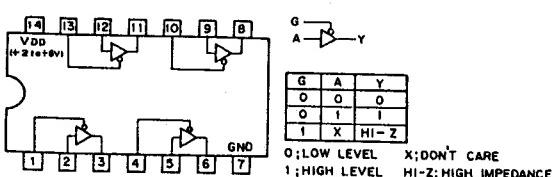
RECEIVER CIRCUIT



HD74HC125P (HITACHI)  
MC74HC125N (MOTOROLA)  
SN74HC125N (TI)

TC74HC125P (TOSHIBA)  
uPD74HC125C (NEC)  
C-MOS BUS BUFFER GATES WITH 3-STATE OUTPUT

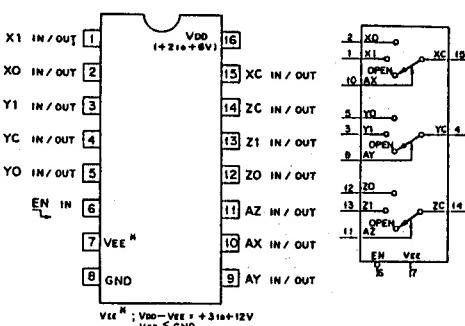
- TOP VIEW -



MC74HC4053N (MOTOROLA)  
TC74HC4053P (TOSHIBA)

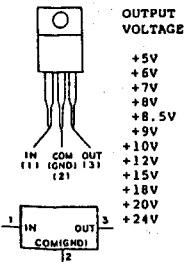
C-MOS 2-CHANNEL MULTIPLEXER/DEMULTIPLEXER

- TOP VIEW -



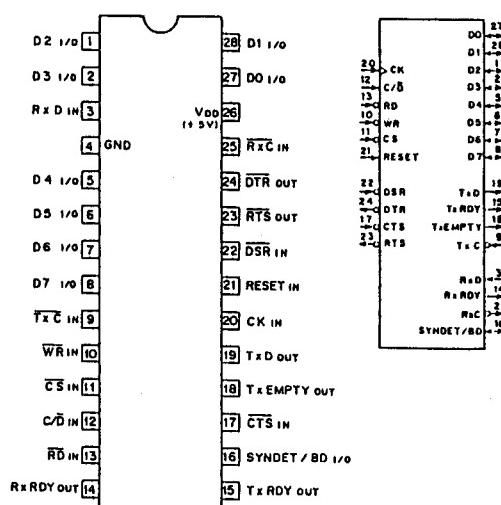
MC78 ? ?CT (MOTOROLA)  
POSITIVE VOLTAGE REGULATOR (1A)

- SIDE VIEW -



uPD71051C (NEC)  
MSM82C41ARS (OKI)  
C-MOS PROGRAMMABLE COMMUNICATION INTERFACE

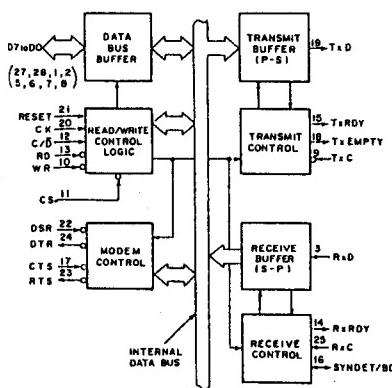
- TOP VIEW -



OPERATION WITH CPU

CS	C/D	RD	WR	FUNCTION
1	X	X	X	DATA BUS 3-STATE
0	X	1	1	DATA BUS 3-STATE
0	1	0	1	STATUS TO CPU
0	1	1	0	CONTROL WORD FROM CPU
0	0	0	1	DATA TO CPU
0	0	1	0	DATA FROM CPU

1 = HIGH LEVEL  
0 = LOW LEVEL  
X = DON'T CARE  
HI-Z = HIGH IMPEDANCE

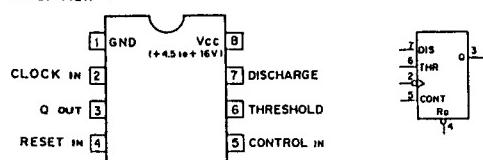


```

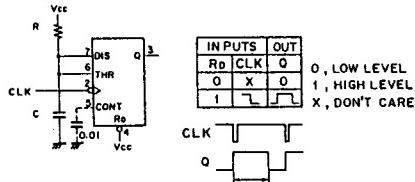
CK; CLOCK SIGNAL
CS; CHIP ENABLE
CTS; CLEAR TO SEND DATA
C/D; DATA,COMMAND WORD OR STATUS WORD IS TO BE WRITTEN OR READ
DO TO D7; DATA
DSR; DATA SET READY
DTR; DATA TERMINAL READY
RD; READ DATA OR STATUS WORD
RESET; RESET BY HIGH LEVEL
RTS; REQUEST TO SEND DATA
RxCl; RECEIVING CLOCK
RxDl; RECEIVING DATA
RxRDY; RECEIVING READY
SYNDET/BD; SYNC DETECT/BREAK DETECT
TxCl; TRANSMITTING CLOCK
TxDl; TRANSMITTING DATA
TxEMPTY; TRANSMITTING CHARACTER EMPTY
TxRDY; TRANSMITTING READY
WR; WRITE DATA OR CONTROL WORD

```

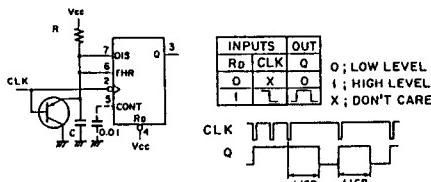
HA17555GS (HITACHI)  
HA17555PS (HITACHI)  
M51841P (MITSUBISHI)  
NE555N (SIGNETICS)  
NJM555D (JRC)  
TL1555P (TI)  
uPC1555C (NEC)  
PRECISION TIMER  
TOP MICHAEL



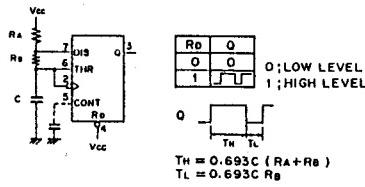
## MONOSTABLE MULTIVIBRATOR



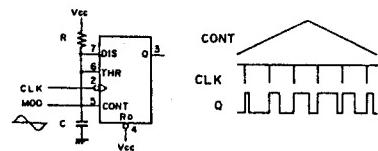
**RETRIGGERABLE MONO. MULTIVIBRATOR  
(MISSING PULSE DETECTOR)**



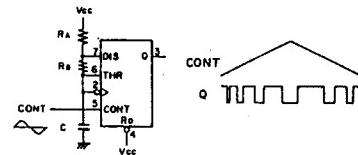
## ASTABLE MULTIVIBRATOR



## PULSE WIDTH MODULATOR



VCO  
(PULSE POSITION MODULATOR)

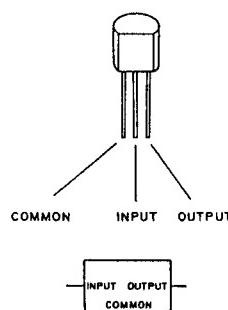


AN78L ?? (MATSUSHITA)

AN78L ? ? (MATSUSHITA)  
NJM2BL ? ?A (NEC)  
uA78L ? ?ACL (T1)  
uA78L ? ?AWV (FSC)  
uPC7BL ? ?J(NEC)

OUTPUT VOLTAGE	NJM78L??A	uA78L??ACL	uA78L??AHV	uPC78L??J	AN78L??
+2.6V	NJM78L02A	uA78L02ACL	uA78L26AHV	-----	
+4V	-----	-----	-----	-----	AN78L04
+5V	NJM78L05A	uA78L05ACL	uA78L05AHV	uPC78L05J	AN78L05
+6V	NJM78L06A	-----	-----	-----	AN78L06
+6.2V	-----	uA78L06ACL	uA78L62AHV	-----	
+7V	-----	-----	-----	-----	AN78L07
+8V	NJM78L08A	uA78L08ACL	-----	uPC78L08J	AN78L08
+8.2V	-----	-----	uA78L82AHV	-----	
+9V	NJM78L09A	uA78L09ACL	uA78L09AHV	-----	AN78L09
+10V	-----	uA78L10ACL	-----	uPC78L10J	AN78L10
+12V	NJM78L12A	uA78L12ACL	uA78L12AHV	uPC78L12J	AN78L12
+15V	NJM78L15A	uA78L15ACL	uA78L15AHV	uPC78L15J	AN78L15
+18V	NJM78L18A	-----	uA78L18AHV	-----	AN78L18
+20V	NJM78L20A	-----	-----	-----	AN78L20
+24V	NJM78L24A	-----	uA78L24AHV	-----	AN78L24

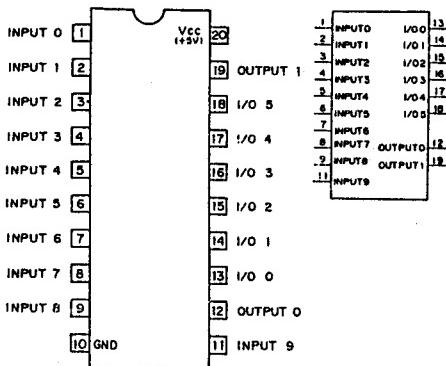
NJM79L ? ?A (JRC)  
NEGATIVE VOLTAGE REGULATOR (100mA)  
FRONT VIEW



OUTPUT VOLTAGE	NJM79LPPA
-3V	NJM79L03A
-4V	
-5V	NJM79L05A
-6V	NJM79L06A
-7V	
-8V	NJM79L08A
-9V	NJM79L09A
-10V	
-12V	NJM79L12A
-15V	NJM79L15A
-18V	NJM79L18A
-20V	
-24V	NJM79L24A

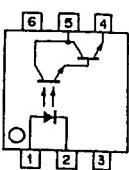
**DDM-2801C/2802C  
DDM-2801C2/2802C2**

**PAL16L8 ACN**  
**PROGRAMMABLE ARRAY LOGIC**  
**- TOP VIEW -**

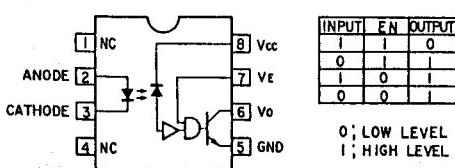


\* ABOVE DIAGRAM SHOWS CONDITIONS BEFORE WRITING OF DATA.

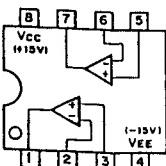
PC111S (SHARP)  
PHOTO COUPLER  
- TOP VIEW -



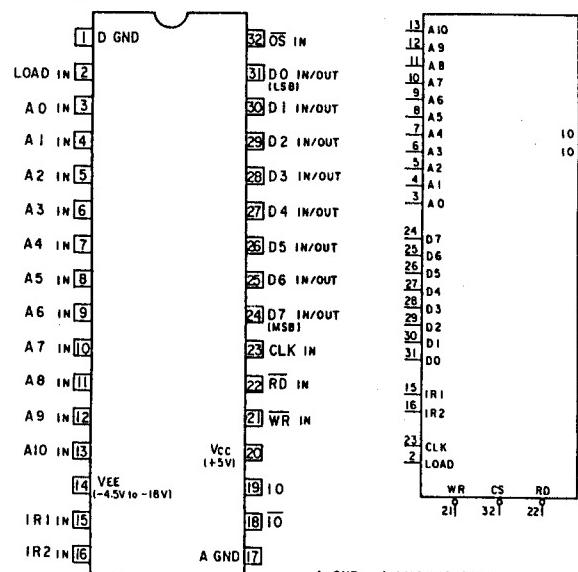
PC910 (SHARP)  
PHOTO COUPLER  
TOP MEDIUM



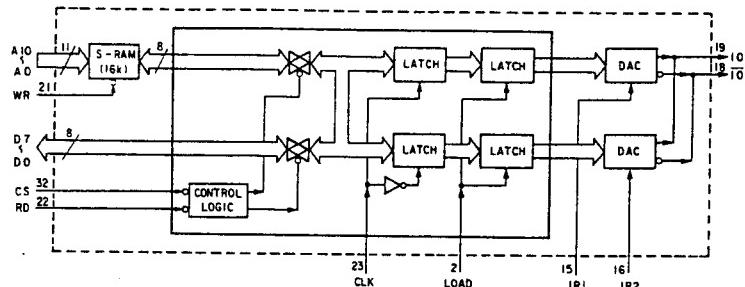
**BA4558 (ROHM)**  
**BA4558F (ROHM) FLAT PACKAGE**  
**HA17568 (HITACHI)**  
**M5218P (MITSUBISHI)**  
**NJM4558D (JRC)**  
**NJM4558D-D (JRC)**  
**NJM4558D-FA (JRC)**  
**NJM4558D-MD (JRC)**  
**NJM4558M (JRC) FLAT PACKAGE**  
**RC4558 (RAYTHEON)**  
**uPC4558C (NEC)**  
**uPC4558G (NEC) FLAT PACKAGE**  
**uPC4558G2 (NEC) FLAT PACKAGE**  
**OPERATIONAL AMPLIFIER**  
 — TOP VIEW —



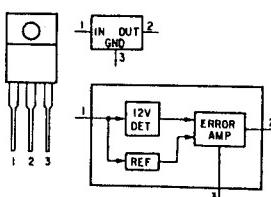
SBX1572-01 (SONY)  
DIGITAL FUNCTION GENERATOR MODULE  
- TOP VIEW -



A GND	ANALOG GND
AIO-AO	ADDRESS INPUTS
CLK	CHANNEL SELECT INPUT
CS	CHIP SELECT INPUT
D7-D0	DATA INPUTS/OUTPUTS
D GND	DIGITAL GND
I0,I0	ANALOG SIGNAL OUTPUT
I1,I2	REFERENCE VOLTAGE INPUTS
LOAD	DATA OUTPUT CLOCK
RD	DATA BUS LINE SELECT INPUT
WR	WRITE INPUT



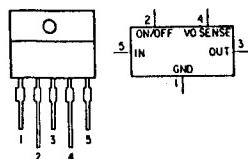
**SE012 (SANKEN)**  
**ERROR AMP**  
- FRONT VIEW -



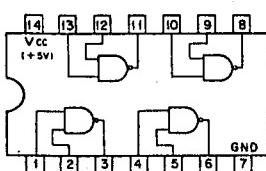
**DDM-2801C/2802C**  
**DDM-2801C2/2802C2**

SI3050C (SANKEN)

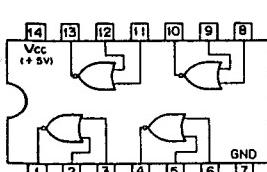
VOLTAGE REGULATOR WITH ON/OFF TERMINAL  
 - FRONT VIEW -



74F00PC (FSC)  
 HD74ALS00P (HITACHI)  
 HD74S00P (HITACHI)  
 MC74F00N (MOTOROLA)  
 N74F00N (SIGNETICS)  
 SN74ALS00AN (TI)  
 SN74ALS00ANS (TI) FLAT PACKAGE  
 SN74ALS00N (TI)  
 SN74AS00N (TI)  
 SN74S00N (TI)  
 SN74S00NS (TI) FLAT PACKAGE  
 TTL 2-INPUT POSITIVE-NAND GATE  
 - TOP VIEW -



74F02PC (FSC)  
 MC74F02N (MOTOROLA)  
 N74F02N (SIGNETICS)  
 SN74ALS02N (TI)  
 SN74ALS02NS (TI) FLAT PACKAGE  
 SN74AS02N (TI)  
 SN74S02N (TI)  
 SN74S02NS (TI) FLAT PACKAGE  
 TTL 2-INPUT POSITIVE-NOR GATE  
 - TOP VIEW -



74F04PC (FSC)  
 74F04SJ (FSC) FLAT PACKAGE  
 M53204P (MITSUBISHI)

MC74F04N (MOTOROLA)

N74F04N (SIGNETICS)

SN74ALS04AN (TI)

SN74ALS04ANS (TI) FLAT PACKAGE

SN74ALS04BN (TI)

SN74ALS04N (TI)

SN74ALS1004N (TI)

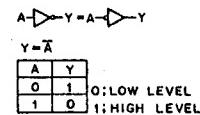
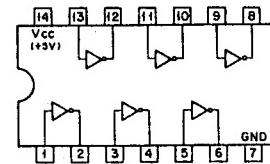
SN74AS04N (TI)

SN74S04N (TI)

SN74S04NS (TI) FLAT PACKAGE

TTL INVERTER

- TOP VIEW -



74F08PC (FSC)

MC74F08N (MOTOROLA)

N74F08N (SIGNETICS)

SN74ALS08N (TI)

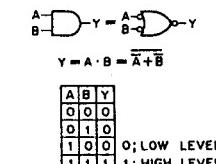
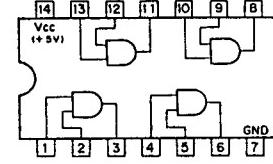
SN74ALS08NS (TI) FLAT PACKAGE

SN74AS08N (TI)

SN74LS08N (TI)

SN74S08N (TI)

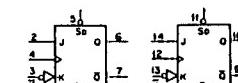
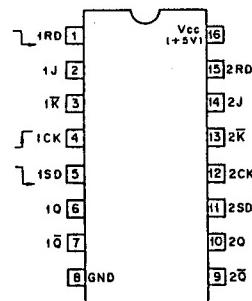
TTL 2-INPUT POSITIVE-AND GATE  
 - TOP VIEW -



N74F109N (SIGNETICS)

SN74ALS109AN (TI)

TTL J-K FLIP-FLOP WITH DIRECT SET/RESET  
 - TOP VIEW -

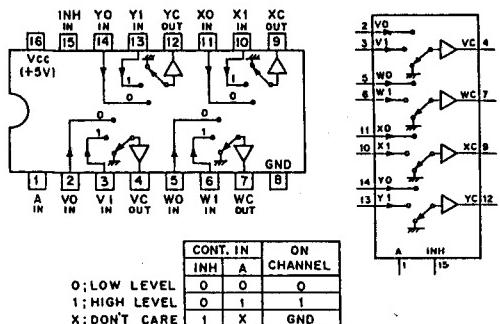


INPUTS		OUTPUTS				
S <sub>d</sub>	R <sub>d</sub>	I <sub>Ck</sub>	J	K	Q <sub>n</sub>	Q̄ <sub>n</sub>
0	1	X	X	X	1	0
1	0	X	X	X	0	1
0	0	X	X	X	1*	1*
					0	0
1	1				0	1
					1	0
1	1	O	X	X	1	0
		O	O	O	1	1
1	0	O	X	X	1	0
		O	O	O	1	1
1	1	O	X	X	0	1
		O	O	O	0	0

0; LOW LEVEL  
 1; HIGH LEVEL  
 X; DON'T CARE  
 \*; NONSTABLE

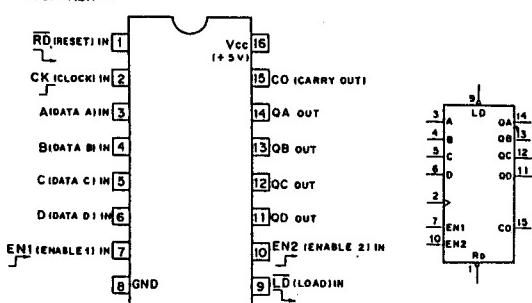
# DDM-2801C/2802C DDM-2801C2/2802C2

74F157APC (FSC)  
 74F157PC (FSC)  
 HD74LS157P (HITACHI)  
 M74LS157P (MITSUBISHI)  
 MB74LS157 (FUJITSU)  
 MC74F157N (MOTOROLA)  
 N74F157N (SIGNETICS)  
 SN74ALS157N (TI)  
 SN74AS157N (TI)  
 SN74L157N (TI)  
 SN74LS157N (TI) FLAT PACKAGE  
 SN74S157N (TI)  
 TTL 2-LINE-TO-1-LINE DATA SELECTOR/MULTIPLEXER  
 — TOP VIEW —



74F163APC (FSC)  
 74F163PC (FSC)  
 74F163SJ (FSC) FLAT PACKAGE  
 MC74F163AN (MOTOROLA)  
 MC74F163AM (MOTOROLA) FLAT PACKAGE  
 SN74163N (TI)  
 SN74ALS163AN (TI)  
 SN74ALS163ANS (TI) FLAT PACKAGE  
 SN74ALS163BN (TI)  
 SN74ALS163BNS (TI) FLAT PACKAGE  
 SN74ALS163N (TI)  
 SN74AS163N (TI)  
 SN74S163N (TI)

TTL PRESETTABLE SYNCHRONOUS 4-BIT BINARY COUNTER  
 — TOP VIEW —



MODE SELECTION				
CONTROL INPUTS				MODE
Rd	LD	EN1	EN2	
0	X	X	X	RESET (SYNCHRONOUS)
1	0	X	X	PRESET (SYNCHRONOUS)
1	1	0	X	NO COUNT
1	1	X	0	NO COUNT
1	1	1	1	COUNT

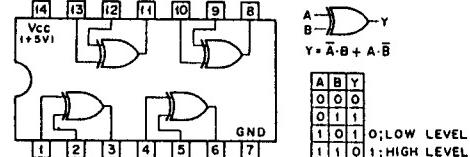
0; LOW LEVEL  
 1; HIGH LEVEL  
 X; DON'T CARE

CARRY OUTPUT "CO"  
 $Q_4 \cdot Q_3 \cdot Q_2 \cdot Q_1 = CO$

CO IS HIGH WHEN EN2 INPUT IS HIGH AND COUNT IS "15"

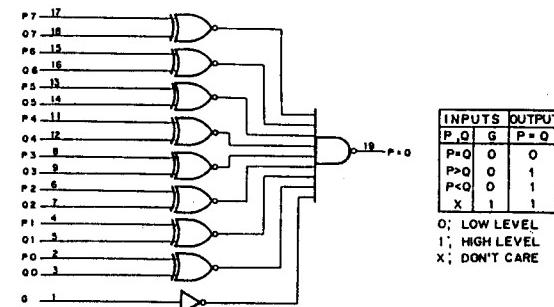
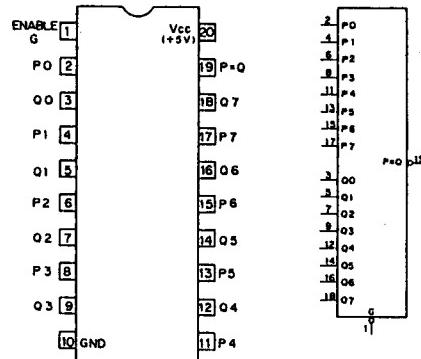
74F86PC (FSC)  
 74F86SJ (FSC) FLAT PACKAGE  
 MC74F86N (MOTOROLA)  
 N74F86N (SIGNETICS)  
 SN74ALS86N (TI)  
 SN74ALS86NS (TI) FLAT PACKAGE  
 SN74S86N (TI)  
 TTL EXCLUSIVE OR GATE

— TOP VIEW —



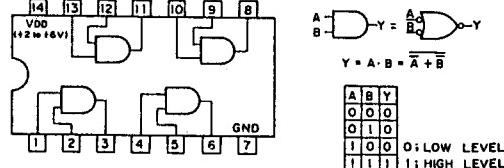
SN74ALS521N (TI)  
 TTL 8-BIT EQUAL-TO COMPARATOR

— TOP VIEW —



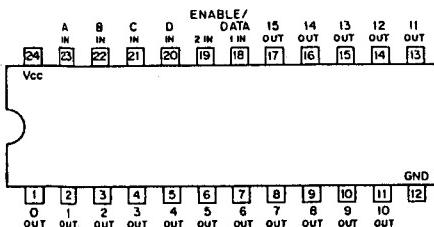
HD74HC08P (HITACHI)  
 MC74HC08N (MOTOROLA)  
 SN74HC08N (TI)  
 TC74HC08P (TOSHIBA)  
 uPD74HC08C (NEC)  
 C-MOS 2-INPUT AND GATE

— TOP VIEW —



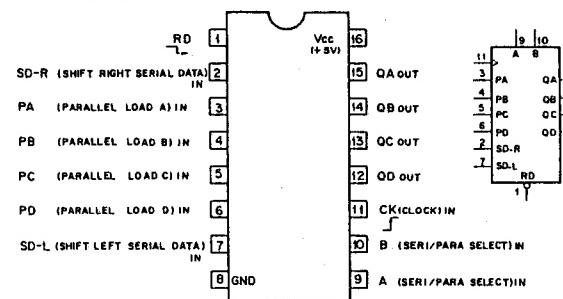
# DDM-2801C/2802C DDM-2801C2/2802C2

**SN74HC154NT (TI)**  
TTL 4-LINE-TO-16-LINE DECODER/DEMULTIPLEXER  
— TOP VIEW —



EN1/EN2	INPUTS		OUTPUTS																
	D	C	B	A	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0
1	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
2	1	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
3	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
4	0	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
5	0	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
6	0	0	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0
7	0	0	1	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1	0
8	0	0	0	1	0	1	0	1	1	1	1	1	1	1	1	1	1	1	0
9	0	0	0	0	1	0	1	0	1	1	1	1	1	1	1	1	1	1	0
10	0	0	0	0	1	0	0	1	1	1	1	1	1	1	1	1	1	1	0
11	0	0	0	0	1	0	0	1	1	1	1	1	1	1	1	1	1	1	0
12	0	0	0	0	1	0	0	1	1	1	1	1	1	1	1	1	1	1	0
13	0	0	0	0	1	0	0	1	1	1	1	1	1	1	1	1	1	1	0
14	0	0	0	0	1	0	0	1	1	1	1	1	1	1	1	1	1	1	0
15	0	0	0	0	1	0	0	1	1	1	1	1	1	1	1	1	1	1	0
16	0	0	0	0	1	0	0	1	1	1	1	1	1	1	1	1	1	1	0
17	0	0	0	0	1	0	0	1	1	1	1	1	1	1	1	1	1	1	0
18	0	0	0	0	1	0	0	1	1	1	1	1	1	1	1	1	1	1	0
19	0	0	0	0	1	0	0	1	1	1	1	1	1	1	1	1	1	1	0
20	0	0	0	0	1	0	0	1	1	1	1	1	1	1	1	1	1	1	0
21	0	0	0	0	1	0	0	1	1	1	1	1	1	1	1	1	1	1	0
22	0	0	0	0	1	0	0	1	1	1	1	1	1	1	1	1	1	1	0
23	0	0	0	0	1	0	0	1	1	1	1	1	1	1	1	1	1	1	0
24	0	0	0	0	1	0	0	1	1	1	1	1	1	1	1	1	1	1	0

**74F194 PC (FSC)**  
**MC74F194N (MOTOROLA)**  
**N74F194N (SIGNETICS)**  
**SN74AS194N (TI)**  
**SN74S194N (TI)**  
TTL 4-BIT BIDIRECTIONAL UNIVERSAL SHIFT REGISTER  
— TOP VIEW —



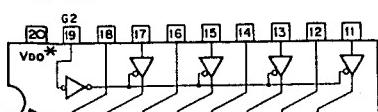
RD	INPUTS				OUTPUTS			
	MODE	-SERIAL-	PARALLEL LOAD	Q A Q B Q C Q D	Q A Q B Q C Q D	Q A Q B Q C Q D	Q A Q B Q C Q D	Q A Q B Q C Q D
0	X X X X	X X X X	X X X X	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
1	X X X X	O O O O	X X X X	Q A Q B Q C Q D	Q A Q B Q C Q D	Q A Q B Q C Q D	Q A Q B Q C Q D	Q A Q B Q C Q D
1	1 1 1 1	J J J J	X X X X	A B C D	A B C D	A B C D	A B C D	A B C D
1	0 1 1 1	J J J J	X X X X	1 1 1 1	1 1 1 1	1 1 1 1	1 1 1 1	1 1 1 1
1	0 0 1 1	J J J J	X X X X	Q A n Q B n Q C n Q D n	Q A n Q B n Q C n Q D n	Q A n Q B n Q C n Q D n	Q A n Q B n Q C n Q D n	Q A n Q B n Q C n Q D n
1	0 0 0 1	J J J J	X X X X	Q B n Q C n Q D n 1	Q B n Q C n Q D n 1	Q B n Q C n Q D n 1	Q B n Q C n Q D n 1	Q B n Q C n Q D n 1
1	0 0 0 0	J J J J	X X X X	Q A o Q B o Q C o Q D o	Q A o Q B o Q C o Q D o	Q A o Q B o Q C o Q D o	Q A o Q B o Q C o Q D o	Q A o Q B o Q C o Q D o

A,B,C,D=THE LEVEL OF STEADY-STATE INPUT AT PA,PB,PC,OR PD,RESPECTIVELY.  
QA,QB,QC,QD=THE LEVEL OF QA,QB,QC,OR QD,RESPECTIVELY, BEFORE THE  
INDICATED STEADY-STATE INPUT CONDITIONS WERE ESTABLISHED.  
QAn,QBn,QCn,QDn=THE LEVEL OF QA,PB,QC,OR QD RESPECTIVELY, BEFORE MOST  
RECENT J TRANSITION OF THE CLOCK.  
0=LOW LEVEL 1=HIGH LEVEL X=DON'T CARE

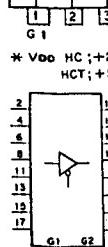
**HD74HC244P (HITACHI)**  
**MC74HC244N (MOTOROLA)**  
**MC74HCT244N (MOTOROLA)**  
**MSM74HC244RS (OKI)**  
**SN74HC244N (TI)**  
**SN74HCT244N (TI)**

**TC74HC244P (TOSHIBA)**  
**TC74HCT244P (TOSHIBA)**  
**uPD74HC244C (NEC)**  
**C-MOS BUS BUFFER WITH 3-STATE OUTPUT**

— TOP VIEW —

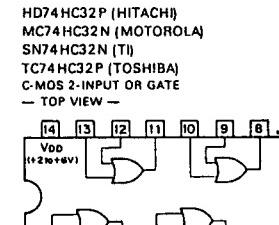


\* Vdd HC : +2 to +6V  
HCT : +5V



G	A	Y
0	0	0
0	1	1
1	X	HI-Z
HI-Z		

0:LOW LEVEL  
1:HIGH LEVEL  
X:DONT CARE  
HI-Z:HIGH IMPEDANCE



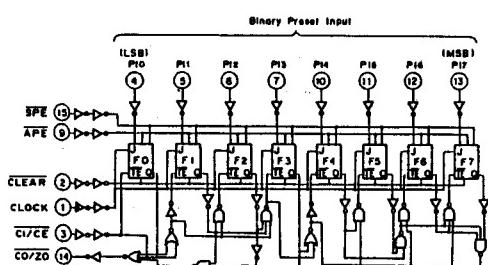
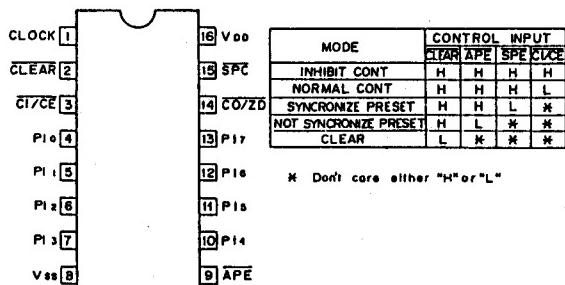
A	B	Y
0	0	0
0	1	1
1	0	1
1	1	1

0:LOW LEVEL  
1:HIGH LEVEL

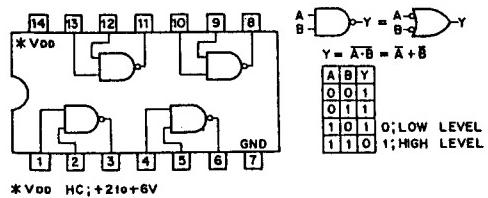
# DDM-2801C/2802C

## DDM-2801C2/2802C2

TC40103BP (TOSHIBA)  
8-STAGE PRESETTABLE SYNCHRONOUS DOWN COUNTER  
— TOP VIEW —

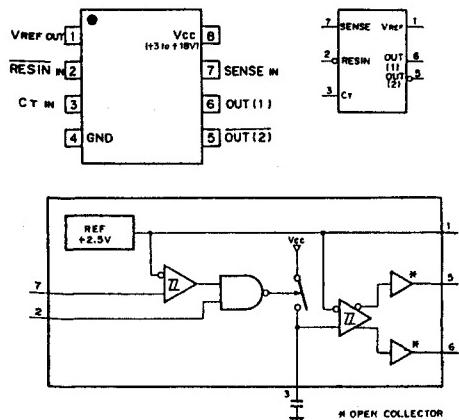


HD74HC00P (HITACHI)  
MC74HC00N (MOTOROLA)  
MC74HCT00N (MOTOROLA)  
MSM74HC00RS (OKI)  
SN74HC00N (TI)  
TC74HC00P (TOSHIBA)  
uPD74HC00C (NEC)  
C-MOS 2-INPUT NAND GATE  
— TOP VIEW —

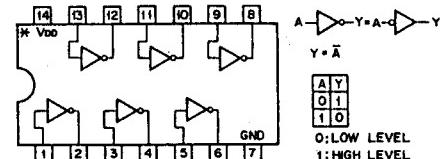


\*V<sub>DD</sub> HC; +210+6V  
HCT; +5V

TL7705ACP (TI)  
TL7705CP (TI)  
TL7705CPS-B (TI) FLAT PACKAGE  
POWER VOLTAGE SUPERVISOR  
— TOP VIEW —

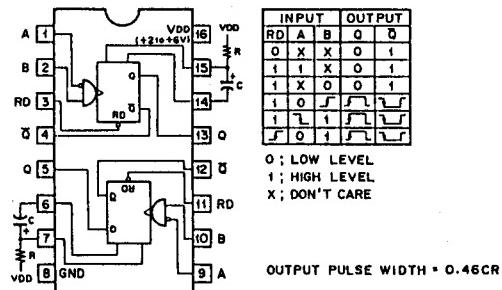


HD74HC04P (HITACHI)  
MC74HC04N (MOTOROLA)  
MC74HCT04N (MOTOROLA)  
MC74HCU04N (MOTOROLA)  
MSM74HC04RS (OKI)  
SN74HC04N (TI)  
TC74HC04P (TOSHIBA)  
TC74HCT04P (TOSHIBA)  
TC74HCU04P (TOSHIBA)  
uPD74HC04C (NEC)  
uPD74HCU04C (NEC)  
C-MOS INVERTER  
— TOP VIEW —

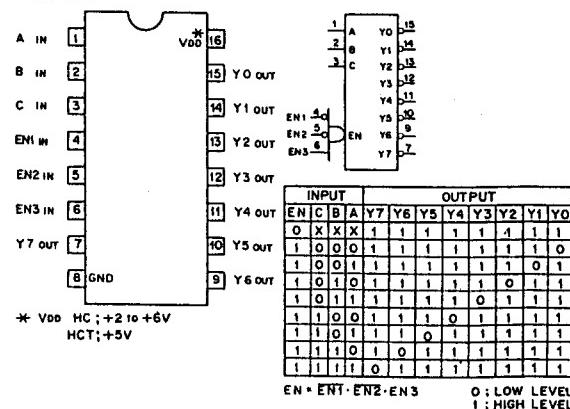


\*V<sub>DD</sub> HC, HCU; +210+6V  
HCT; +5V

HD74HC123P (HITACHI)  
MC74HC123N (MOTOROLA)  
TC74HC123P (TOSHIBA)  
uPD74HC123AC (NEC)  
uPD74HC123N (NEC)  
C-MOS DUAL RETRIGGERABLE MONOSTABLE MULTIVIBRATOR  
— TOP VIEW —



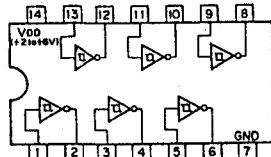
HD74HC138P (HITACHI)  
HD74HCT138P (HITACHI)  
MC74HC138N (MOTOROLA)  
MC74HCT138N (MOTOROLA)  
SN74HC138N (TI)  
TC74HC138P (TOSHIBA)  
TC74HCT138P (TOSHIBA)  
C-MOS 3-TO-8 LINE DECODER/DEMULTIPLEXER  
— TOP VIEW —



HD74HC14P (HITACHI)  
MC74HC14N (MOTOROLA)  
MSM74HC14RS (OKI)  
SN74HC14N (TI)  
TC74HC14P (TOSHIBA)  
uPD74HC14C (NEC)

C-MOS SCHMITT TRIGGER INVERTER

— TOP VIEW —



$$A \rightarrow O - Y = A - \bar{D} \rightarrow Y$$

$$Y = \bar{A}$$

$$V_{IN} \rightarrow D \rightarrow V_{OUT}$$

$$\begin{array}{|c|c|} \hline A & Y \\ \hline 0 & 1 \\ 1 & 0 \\ \hline \end{array}$$

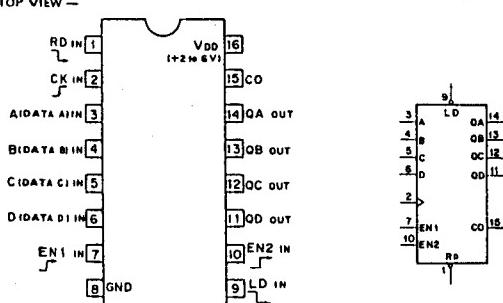
0:LOW LEVEL  
1:HIGH LEVEL

V <sub>D</sub>	V <sub>H</sub>	V <sub>P</sub>
2.0V	0.75V	1.25V
4.5V	1.8V	2.7V
6.0V	2.4V	3.6V

HD74HC163P (HITACHI)  
MC74HC163N (MOTOROLA)  
MSM74HC163RS (OKI)  
SN74HC163N (TI)  
TC74HC163P (TOSHIBA)  
uPD74HC163C (NEC)

C-MOS PRESETTABLE SYNCHRONOUS 4-BIT BINARY COUNTER

— TOP VIEW —



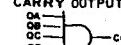
#### MODE SELECTION

CONTROL INPUTS				MODE
Rd	Ld	En1	En2	RESET (SYNCHRONOUS)
0	X	X	X	PRESET (SYNCHRONOUS)
1	0	X	X	NO COUNT
1	1	0	X	NO COUNT
1	1	X	0	COUNT

#### COUNT SEQUENCE

COUNT	OUTPUTS
0	Q0 Q1 Q2 Q3
1	0 0 0 1
2	0 0 1 0
3	0 0 1 1
4	0 1 0 0
5	0 1 0 1
6	0 1 1 0
7	0 1 1 1
8	1 0 0 0
9	1 0 0 1
10	1 0 1 0
11	1 0 1 1
12	1 1 0 0
13	1 1 0 1
14	1 1 1 0
15	1 1 1 1

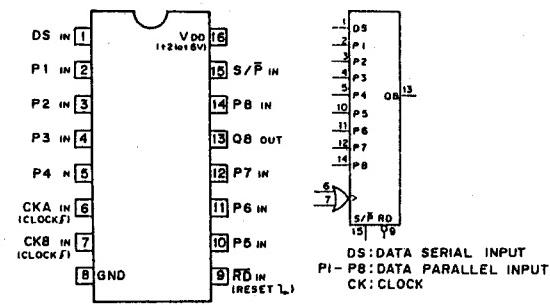
#### CARRY OUTPUT "CO"



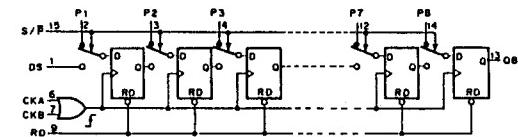
CO IS HIGH WHEN EN2 INPUT IS HIGH AND COUNT IS "15".

HD74HC166P (HITACHI)  
MC74HC166N (MOTOROLA)  
SN74HC166N (TI)  
TC74HC166P (TOSHIBA)

C-MOS 8-BIT SHIFT REGISTER  
— TOP VIEW —



DS: DATA SERIAL INPUT  
PI-P8: DATA PARALLEL INPUT  
CK: CLOCK



CKA CKB CK

0 0 0  
X X X  
1 X I  
I I I  
J J J  
0 J J  
F F F

CKA CKB CK

0 0 0  
X X X  
1 X X  
I I I  
J J J  
0 J J  
F F F

INPUT OUTPUT

RDS/PCK	DS	PI-P8	Q8
0 X X X	X X X	0	0
1 X 0 X X	0 X X	Q8	0
I 0 J X 1-B	J X 1-B	0	0
J 1 J	1 X	Q7a	0
0 J J	J 0 X	Q7a	0
F F F	F X X	Q6a	0
1 X F 0 X	F X X	Q6a	0

0:LOW LEVEL

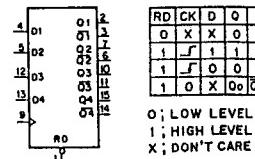
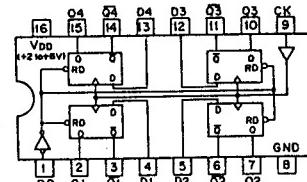
1:HIGH LEVEL

X:DON'T CARE

HD74HC175P (HITACHI)  
MC74HC175N (MOTOROLA)  
MSM74HC175RS (OKI)  
SN74HC175N (TI)  
TC74HC175P (TOSHIBA)  
uPD74HC175C (NEC)

C-MOS D-TYPE FLIP-FLOP WITH RESET

— TOP VIEW —



RD CK D Q O

0 X X 0 1  
1 J 1 1 0  
1 J 0 0 1  
1 0 X 0 0 0

RD

O:LOW LEVEL  
1:HIGH LEVEL  
X:DON'T CARE

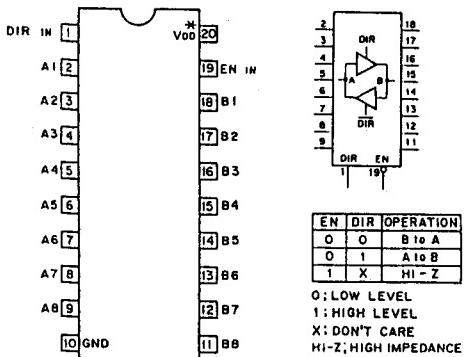
# DDM-2801C/2802C

## DDM-2801C2/2802C2

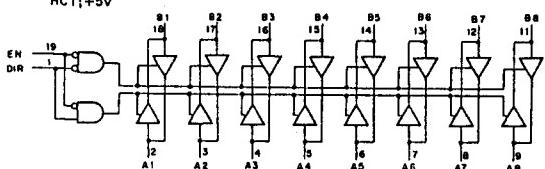
HD74HC245P (HITACHI)  
 HD74HCT245P (HITACHI)  
 MC74HC245N (MOTOROLA)  
 MC74HCT245N (MOTOROLA)  
 MSM74HC245RS (OKI)  
 SN74HC245N (TI)  
 SN74HCT245N (TI)  
 TC74HC245P (TOSHIBA)  
 uPD74HC245C (NEC)

C-MOS BILATERAL BUS TRANSCEIVERS WITH 3-STATE OUTPUT

— TOP VIEW —



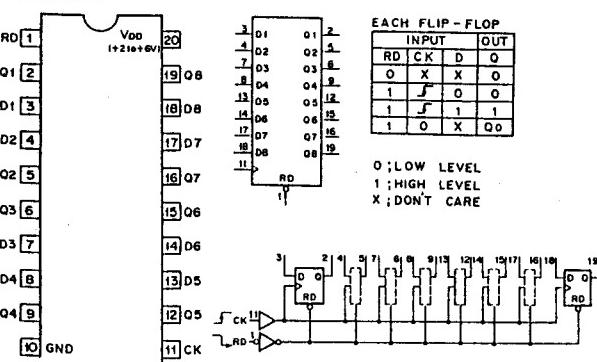
\* V<sub>DD</sub> HC: +2 to +6V  
HCT: +5V



HD74HC273P (HITACHI)  
 MC74HC273N (MOTOROLA)  
 SN74HC273N (TI)  
 TC74HC273P (TOSHIBA)

C-MOS D-TYPE FLIP-FLOP WITH RESET

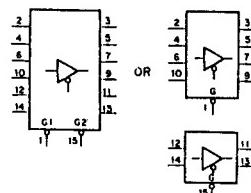
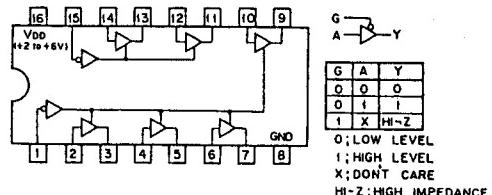
— TOP VIEW —



HD74HC367P (HITACHI)  
 MC74HC367N (MOTOROLA)  
 SN74HC367N (TI)  
 TC74HC367F (TOSHIBA) FLAT PACKAGE  
 TC74HC367P (TOSHIBA)  
 uPD74HC367C (NEC)

C-MOS BUS DRIVER WITH 3-STATE OUTPUTS

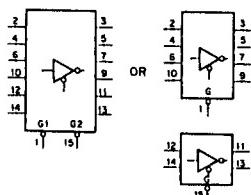
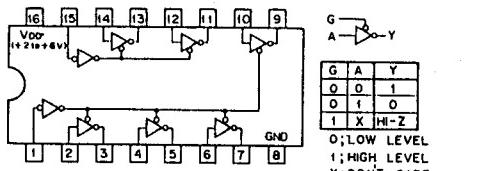
— TOP VIEW —



HD74HC368P (HITACHI)  
 MC74HC368N (MOTOROLA)  
 SN74HC368N (TI)  
 TC74HC368P (TOSHIBA)

C-MOS BUS INVERTER WITH 3-STATE OUTPUTS

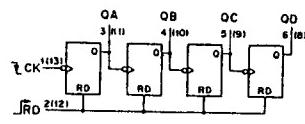
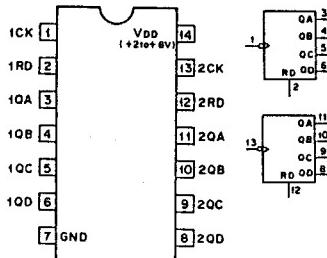
— TOP VIEW —



HD74HC393P (HITACHI)  
 MC74HC393N (MOTOROLA)  
 SN74HC393N (TI)  
 TC74HC393P (TOSHIBA)

C-MOS 4-BIT BINARY COUNTER

— TOP VIEW —

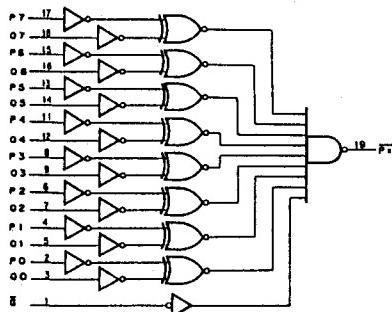
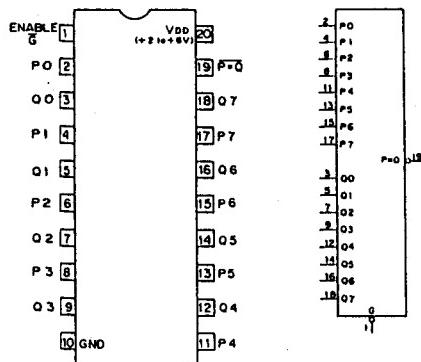


COUNT	QD	QC	QB	QA
1	0	0	0	0
0	0	0	0	1

RESET/COUNT FUNCTION
RD QD QC QB QA
1 0 0 0 0

**DDM-2801C/2802C**  
**DDM-2801C2/2802C2**

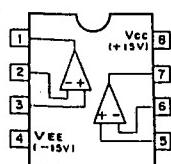
MC74HC688N (MOTOROLA)  
 MSM74HC688RS (OKI)  
 SN74HC688N (TI)  
 TC74 HC688BP (TOSHIBA)  
 uPD74HC688C (NEC)  
 C-MOS 8-BIT MAGNITUDE COMPARATOR  
 — TOP VIEW —



INPUTS	OUTPUT
P <sub>0</sub> 0	P=Q 0
P>Q 0	1
P<Q 0	1
X 1	1

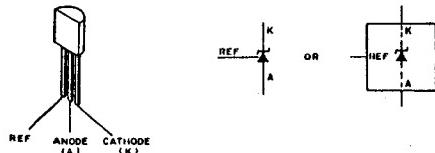
O: LOW LEVEL  
 1: HIGH LEVEL  
 X: DON'T CARE

TL082ACP (TI)  
 TL082BCP (TI)  
 TL082CP (TI)  
 TL082CPS (TI) FLAT PACKAGE  
 uPC4082C (NEC)  
 uPC4082G2 (NEC) FLAT PACKAGE  
 OPERATIONAL AMPLIFIER  
 (J FET-INPUT)  
 — TOP VIEW — TL082CP

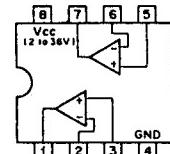


L5431 (SANYO)  
 TL431CLP (TI)  
 TL431CLPB (TI)  
 uPC1093J (NEC)

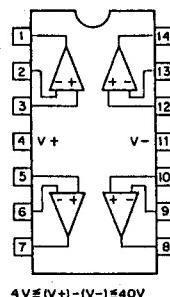
ADJUSTABLE PRECISION SHUNT REGULATOR



BAB993 (ROHM)  
 IR393 (SHARP)  
 LM393N (NSC)  
 NJM2903D (JRC)  
 NJM2903M (JRC) FLAT PACKAGE  
 uA393DC (FSC)  
 uPC393C (NEC)  
 uPC393G (NEC) FLAT PACKAGE  
 uPC393G2 (NEC) FLAT PACKAGE  
 VOLTAGE COMPARATOR  
 — TOP VIEW — uA393DC

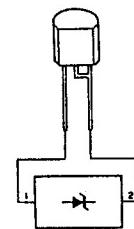


uPC4574C (NEC)  
 uPC4574G2 (NEC)  
 OPERATIONAL AMPLIFIER  
 — TOP VIEW —



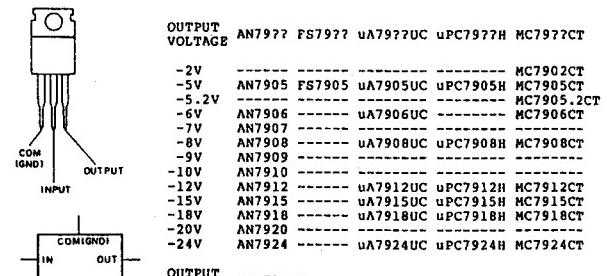
4V ≤ (V+) - (V-) ≤ 40V

uPC574J (NEC)  
 BIPOLE ZENER DIODE (10mA)  
 — FRONT VIEW —



AN79 ? ? (MATSUSHITA)  
 FS79 ? ? (SANKEN)  
 MC79 ? ? CT (MOTOROLA)  
 NJM79 ? ? A (JRC)  
 uA79 ? ? UC (FSC)  
 uPC79 ? ? H (NEC)

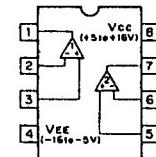
NEGATIVE VOLTAGE REGULATOR (1A)  
 — SIDE VIEW —



OUTPUT VOLTAGE NJM79??A

-2V	-----
-5V	NJM7905A
-5.2V	-----
-6V	NJM7906A
-7V	-----
-8V	NJM7908A
-9V	NJM7909A
-10V	-----
-12V	NJM7912A
-15V	NJM7915A
-18V	NJM7918A
-20V	-----
-24V	NJM7924A

uPC814C (NEC)  
 uPC814G2 (NEC) FLAT PACKAGE  
 TTL-DUAL OPERATIONAL AMPLIFIER  
 — TOP VIEW —



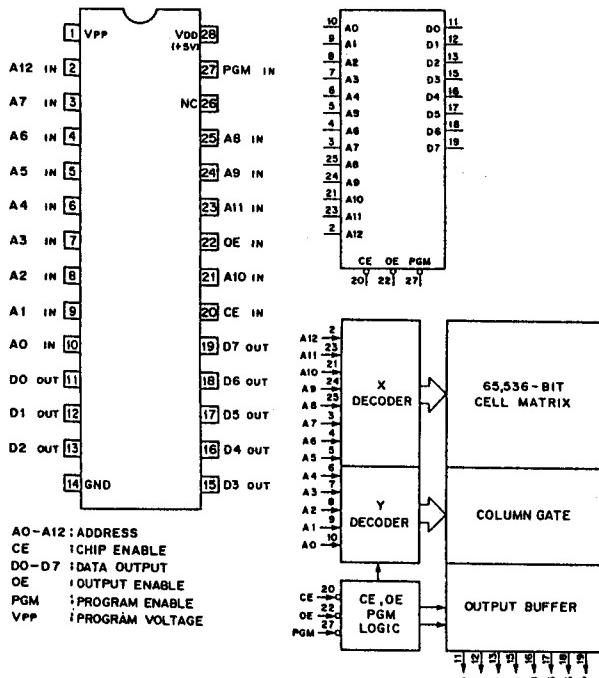
# DDM-2801C/2802C

## DDM-2801C2/2802C2

uPD28C64C-20 (NEC) (ACCESS TIME = 200 nS)

N-MOS 64K (8K-8) ERASABLE PROM WITH 3-STATE OUTPUTS

- TOP VIEW -



An	CE	OE	PGM	V <sub>PP</sub>	Dn	FUNCTION
An	0	0	1	+5V	DENTERED	READ
An	0	1	1	+5V	HI-Z	OUTPUT DISABLE
An	0	0	1	+5V	HI-Z	OUTPUT DISABLE
X	1	X	X	+5V	HI-Z	STANDBY
An	0	X	1	+21V	DIN	PGM
An	0	0	1	+21V	DENTERED	PGM VERIFY
X	1	X	X	+21V	HI-Z	PGM INH

O: LOW LEVEL  
1: HIGH LEVEL  
X: DON'T CARE  
HI-Z: HIGH IMPEDANCE

LH5080A (SHARP)

TMP284CO0AP-8 (TOSHIBA)

uPD70008A (NEC)

uPD70008C (NEC)

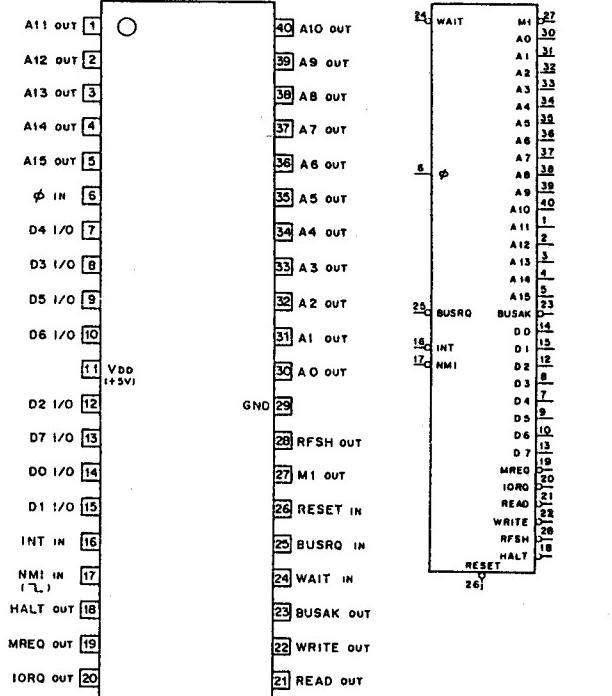
Z8030PC (AMO)

Z84CO006PSC (ZILOG)

Z84CO0-GPS (ZILOG)

C-MOS 8-BIT MICROPROCESSOR

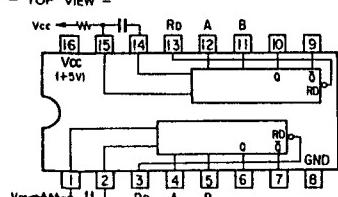
- TOP VIEW -



uPD452BBC (NEC)

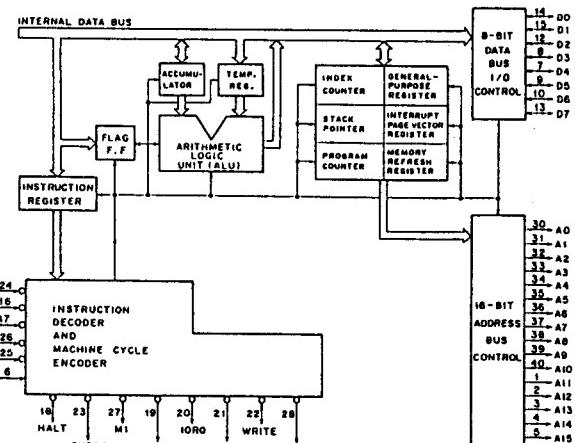
DUAL MONOSTABLE MULTIVIBRATOR

- TOP VIEW -

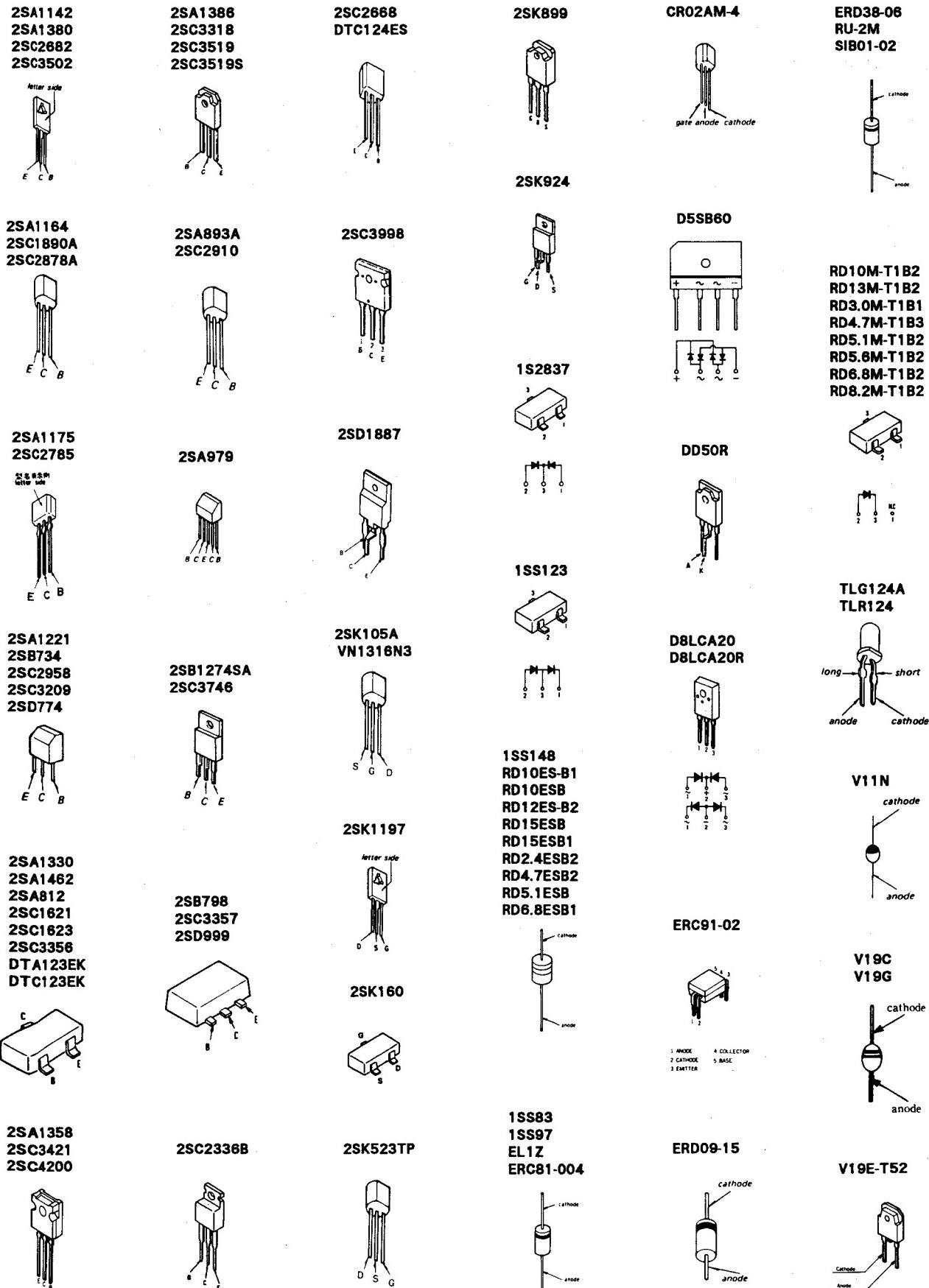


INPUTS	OUTPUTS
Rd	A B
1	1 1
1	0 1
0	1 1
1	1 1
X X	0 1

O: LOW LEVEL  
1: HIGH LEVEL  
X: DON'T CARE



Φ	: CLOCK
AO-A15	: 3-STATE ADDRESS OUTPUT
BUSAK	: BUS ACKNOWLEDGE
BUSRQ	: BUS REQUEST
DO-D7	: 3-STATE DATA INPUT/OUTPUT
HALT	: HALT STATE
INT	: INTERRUPT REQUEST
IORQ	: 3-STATE I/O REQUEST
M1	: MACHINE CYCLE 1
MREQ	: 3-STATE MEMORY REQUEST
NMI	: NON-MASKABLE INTERRUPT (DOWN EDGE TRIGGERED)
READ	: 3-STATE MEMORY READ
RFSH	: REFRESH
WRITE	: 3-STATE MEMORY WRITE



## **SECTION 6 TROUBLE SHOOTING**

### **Trouble Shooting Method**

#### **6-1. Utilizing the failure Indicators**

Failure can be diagnosed by referring to the indicator mechanisms listed below in items (1), (2), (3), and (4).

(Refer to chart 1 which indicates all types of LED error displays)

##### **(1) Receiving screen**

1. Picture blackout
2. Focus error
3. Convergence distortion
4. Uneven color (landing)
5. Picture distortion and change in picture size
6. White balance error

##### **(2) Failure detection circuit installed in every main circuit**

(LED display)

- Green LED is lighted in non-failure conditions
- Red LED is lighted in failure conditions

##### **(3) LED error display of the remote controller (DDM-RM10)**

##### **(4) FAN FAIL→FAN replacement (one of three)**

Perform trouble shooting by referring to the above indicator mechanisms chart 1 on the facing page and related trouble shooting flow charts included later in this section.

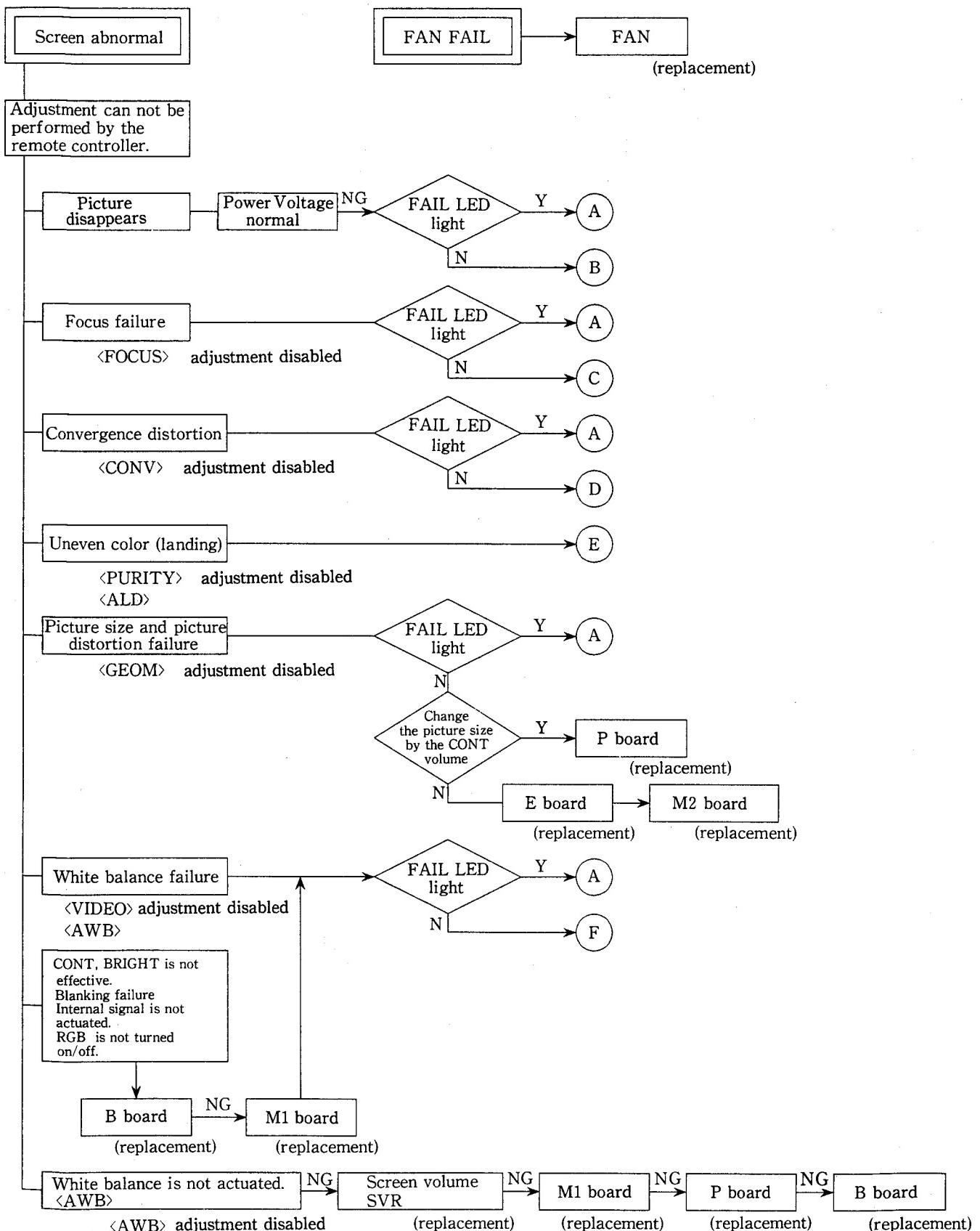
Check the screen content, LED display on the display of the remote controller.

- Note**
1. When the LED of OVP is lighted, keep the power off for a while. After confirming that the light is turned off, perform the operations.
  2. Be sure to turn off the power before the connector is unplugged or replaced.
  3. When moving to the next operation, after the connector is unplugged, be sure to install the connector again to where it was.
  4. The names COMPL and BLOCK are omitted.  
(example : FHL COMPL→FHL)

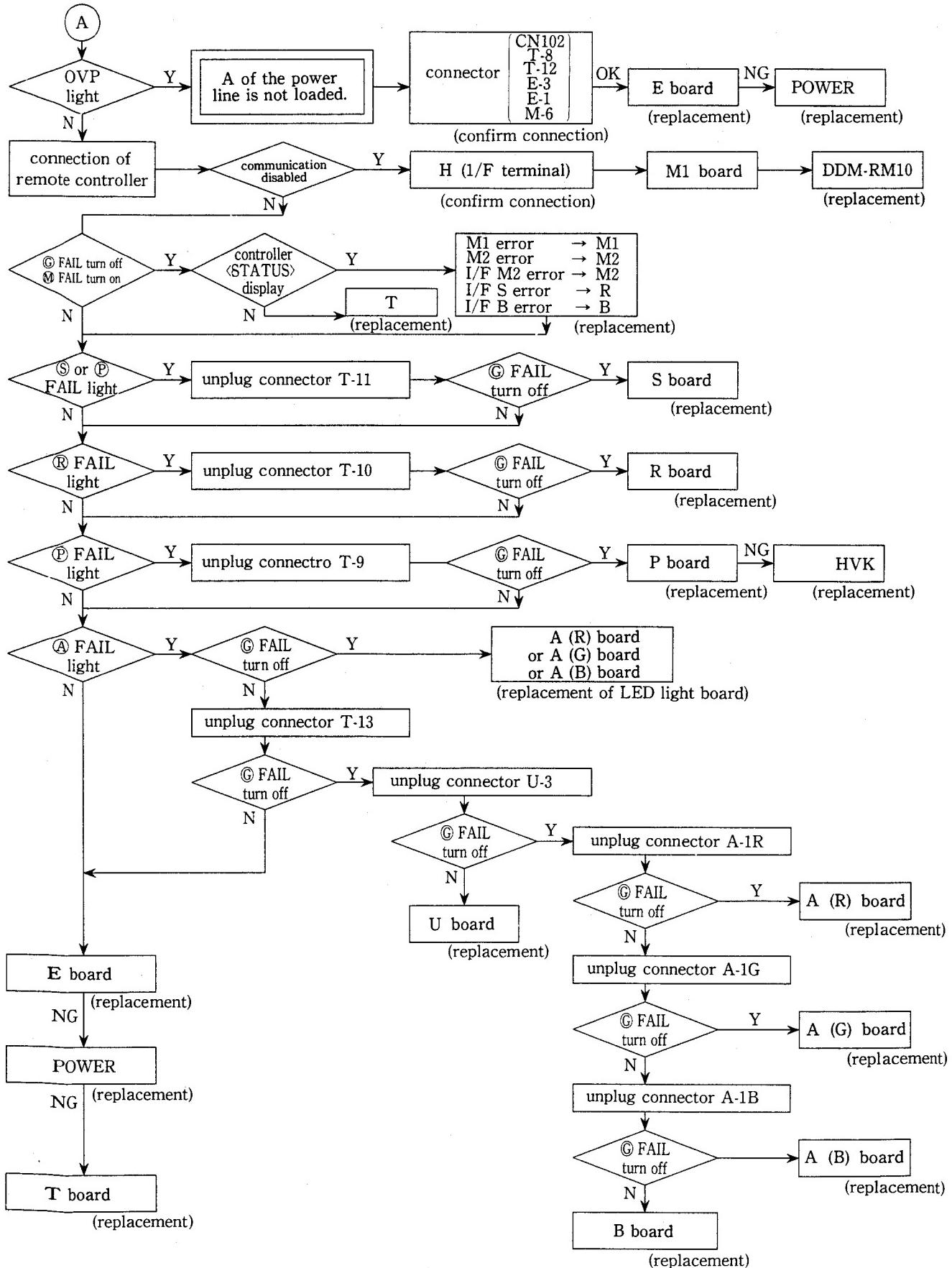
**Failure Display**

LED display on the T board		Board	LED display on each board		Board	Failure circuit block name	Failure and related phenomenon	LCD display of controller<STATUS>
STBY 12V 5V		—	—		—	12V power 5V power	can not power on can not power on	—
G	OVP	—	—	G	170V line 145V line 75V line 45V line 22V line 15V line	170V 145V 75V 45V 22V 15V	Light circuit load causes the high voltage protector to be actuated and the voltage and picture to be cut off.	G
	170V DWN 145V 75V 45V 22V 15V	—	G	170V line 145V line 75V line 45V line 22V line 15V line	170V 145V 75V 45V 22V 15V	170V Line Failure (load shorting, etc.) 145V Line Failure 75V Line Failure 45V Line Failure 22V Line Failure 15V Line Failure		
A		A	FAIL IND (R) FAIL IND (G) FAIL IND (B)	A	video amplifier (R) video amplifier (G) video amplifier (B)	The picture turns to red or cyan. The picture turns to green or magenta. The picture turns to blue or yellow.	A	—
—		B	NO SYNC	HD input		The picture is distorted.	—	—
E		E	H FAIL V FAIL	horizontal output vertical output		No High Voltage/No picture	E	—
P		P	HV FAIL HV PROT IK1 PROT IK2 PROT	HV output HV protector IK1 protector IK2 protector		No High Voltage/No picture	P	—
R		R	H AMP FAIL	R	DCT-1 DCT2 DCT3	The horizontal convergence of R is considerably distorted. (in X-axis direction) The horizontal convergence of B is considerably distorted. (in X-axis direction) The convergence of the center is distorted.	R	—
S		S	CY FAIL	S	CY-1 CY-2	The vertical convergence is distorted.	S	
R		R	QP FAIL	R	AQP OUT DQP OUT	The beam shape is distorted, and the focus turns worse. (on axis) The beam shape is distorted, and the focus turns worse. (corner)	S	—
					DFX FAIL	R DFX		
—		R	DFX PROT	R	DFY	The focus protector is actuated. High voltage is cut.	—	—
M		M1	(segment display)	M1	EPROM	IC4 (EPROM) SAM Check failure	M	M1, IC4
		M1	(segment display)	M1	RAM	IC5 (EPROM) SAM check failure IC6 (EPROM) SAM Check failure	M	M1, IC5
				M2	D/A	IC9 (H CONV R/B) read/write failure IC10 (H CONV B) read/write failure IC11 (CY OUT) read/write failure IC12 (C VCR) read/write failure IC13 (DFX) read/write failure IC14 (AQP) read/write failure IC15 (DQP) read/write failure	M	M2, IC1 M2, IC2 M2, IC3 M2, IC4 M2, IC5 M2, IC6 M2, IC7
		M1	(segment display)	M1	EEPROM	IC7 (EPROM) SAM check failure IC8 (EPROM) SAM check failure	M	M1, IC7 M1, IC8
		M1	(segment display)	M1	I/F	serial out to B failure serial out to R failure serial out to M2 failure	M	I/F M1↔B I/F M1↔S I/F M1↔M2
		M1	(segment display)	M1		IC3 loop testing communication error in monitor	M	M1, IC3
		M1	(segment display)	T	A FAIL E FAIL G FAIL M FAIL P FAIL R FAIL S FAIL FAN FAIL		A E G M P R S FAN	— — — — — — — —
—		M1				normal	—	
FAN					FAN	failure of FAN (any of these)	FAN	—

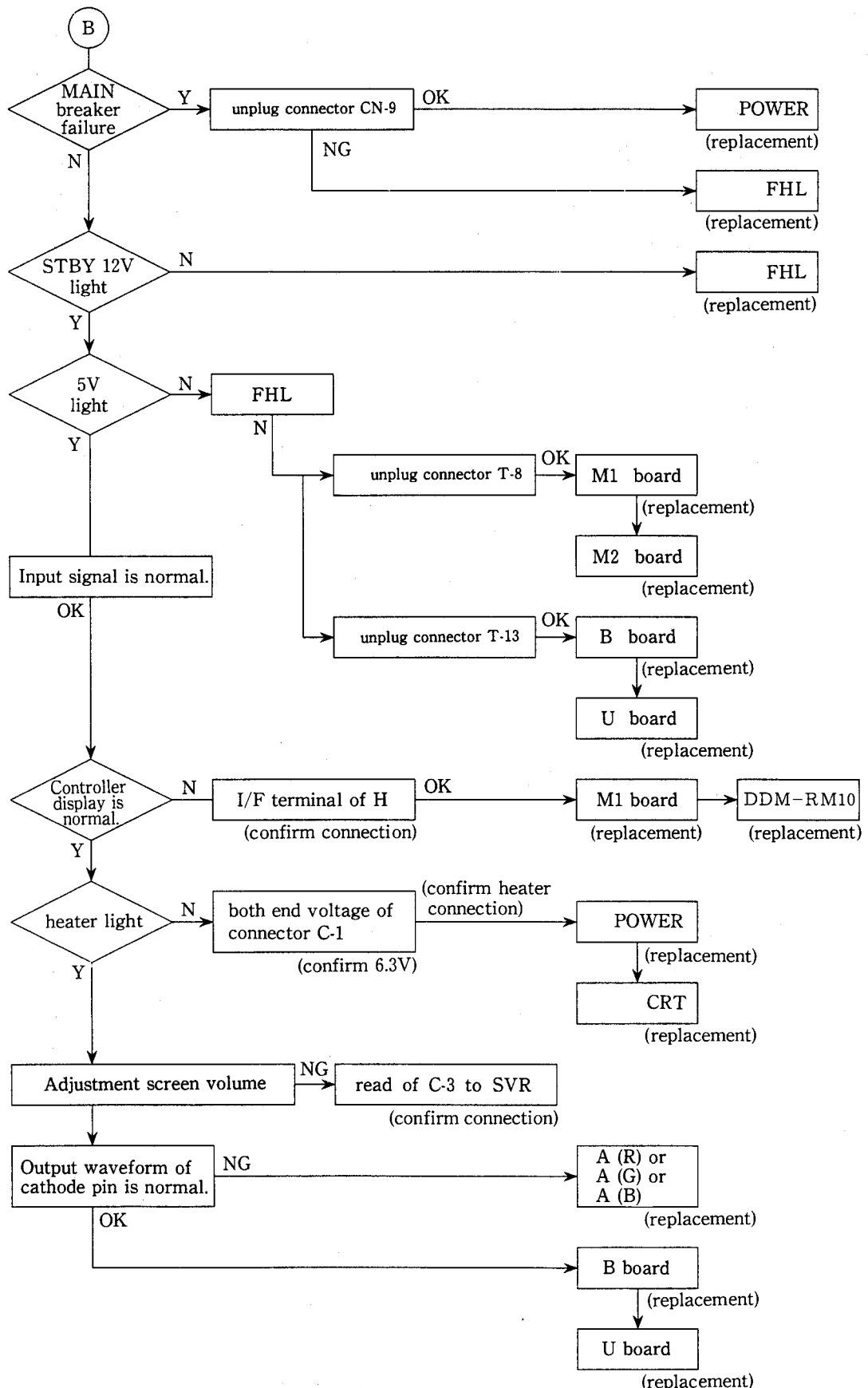
**6-2. BY Phenomenon**



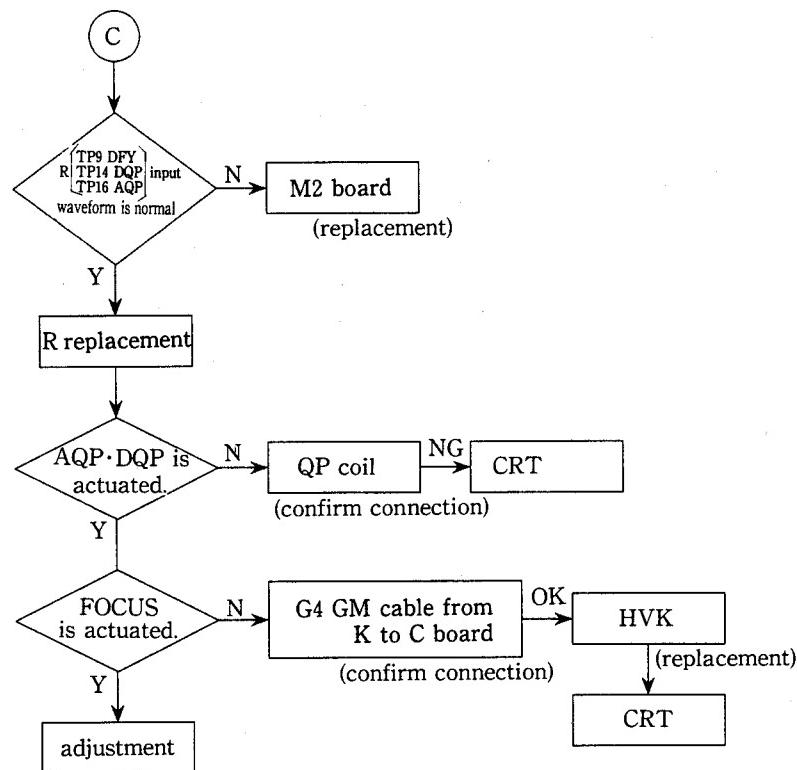
## Phenomenon



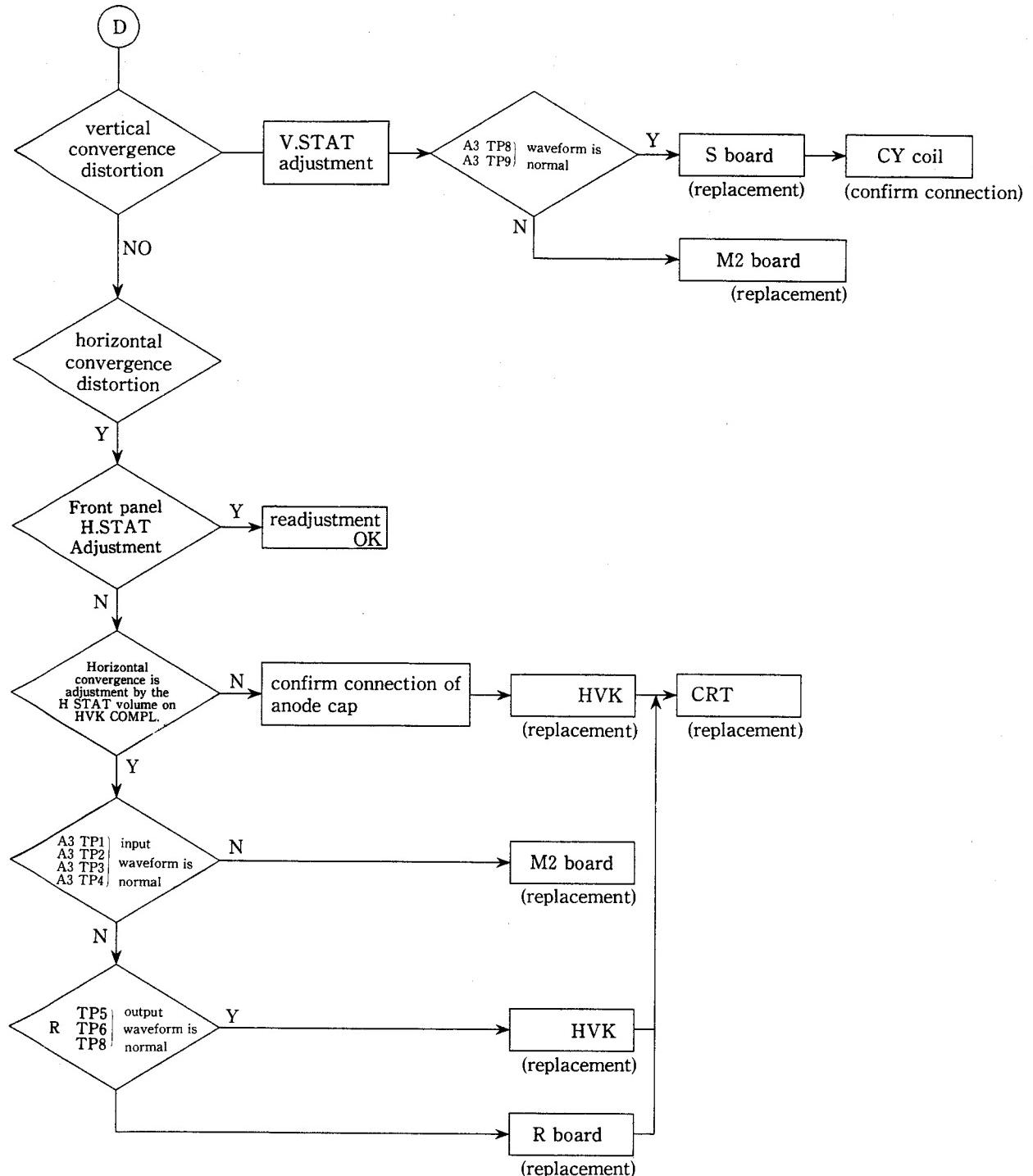
**No Picture Signal**



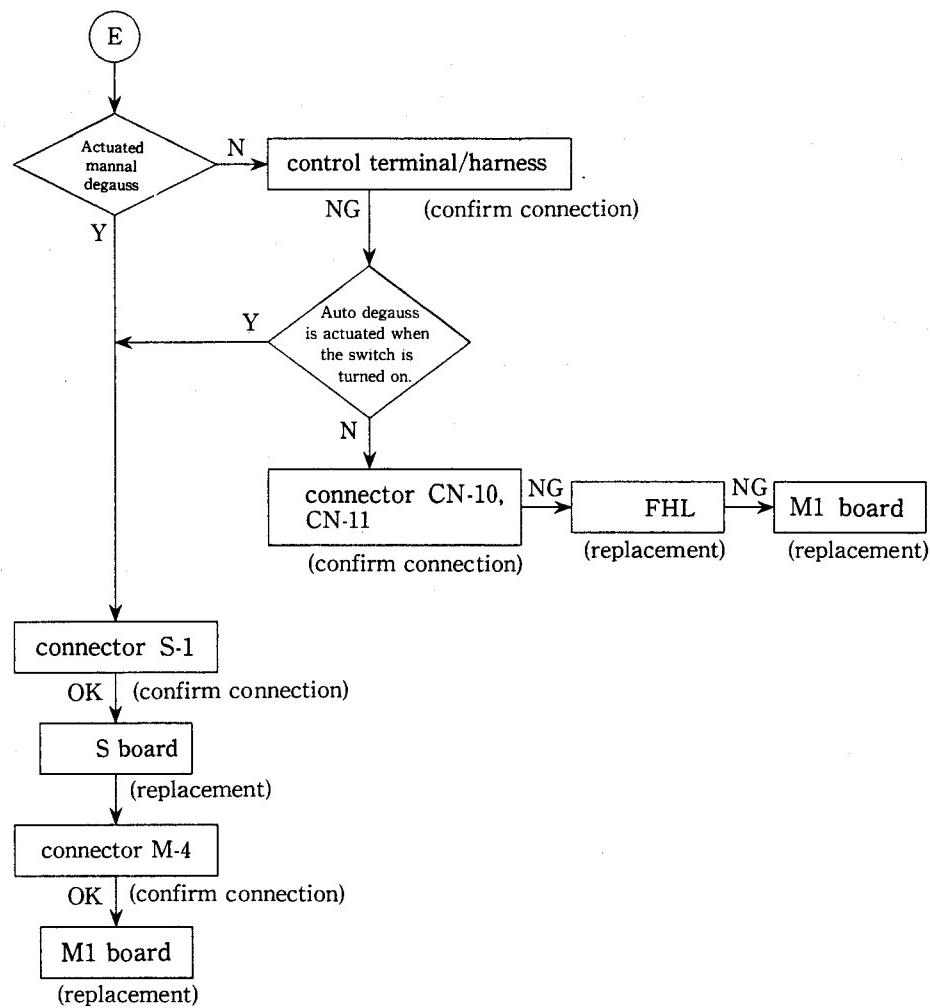
Focus Distortion



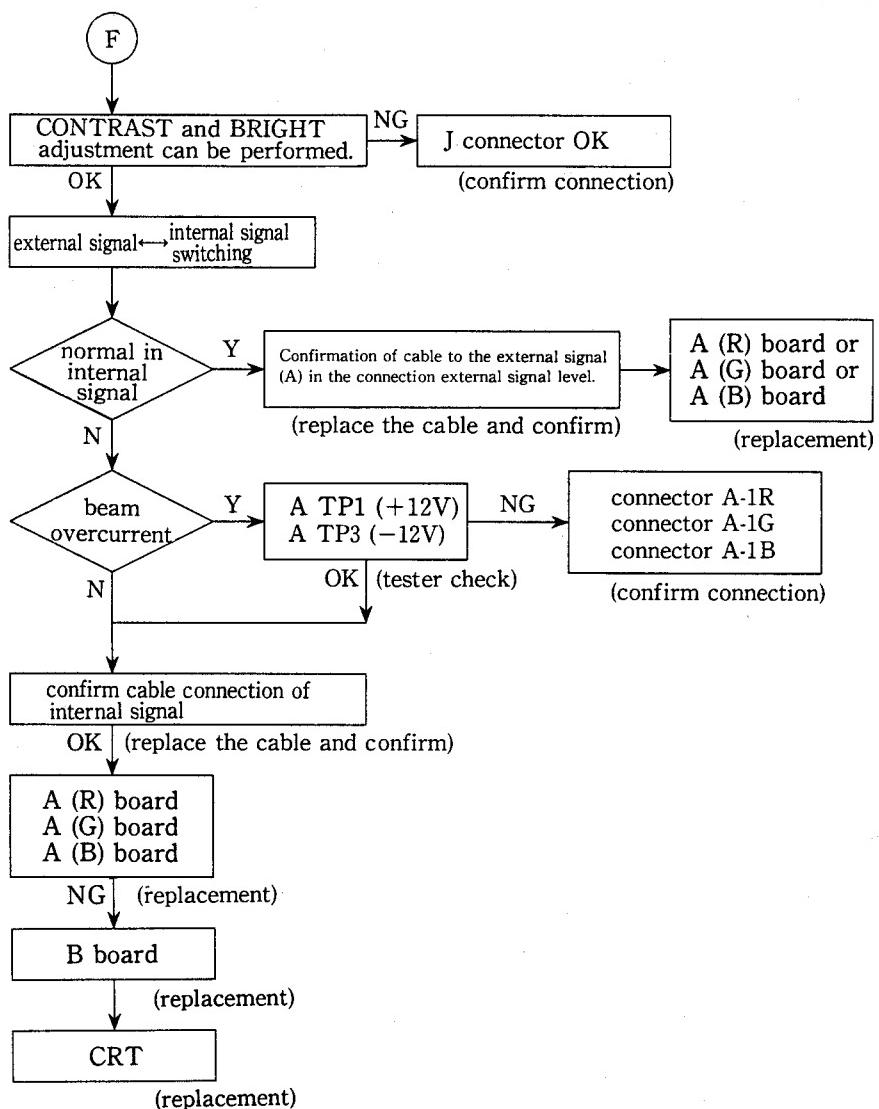
**Convergence Distortion**



**Uneven Color (landing) Failure**



**White Balance Failure**



## SECTION 7 EXPLODED VIEWS

### NOTE:

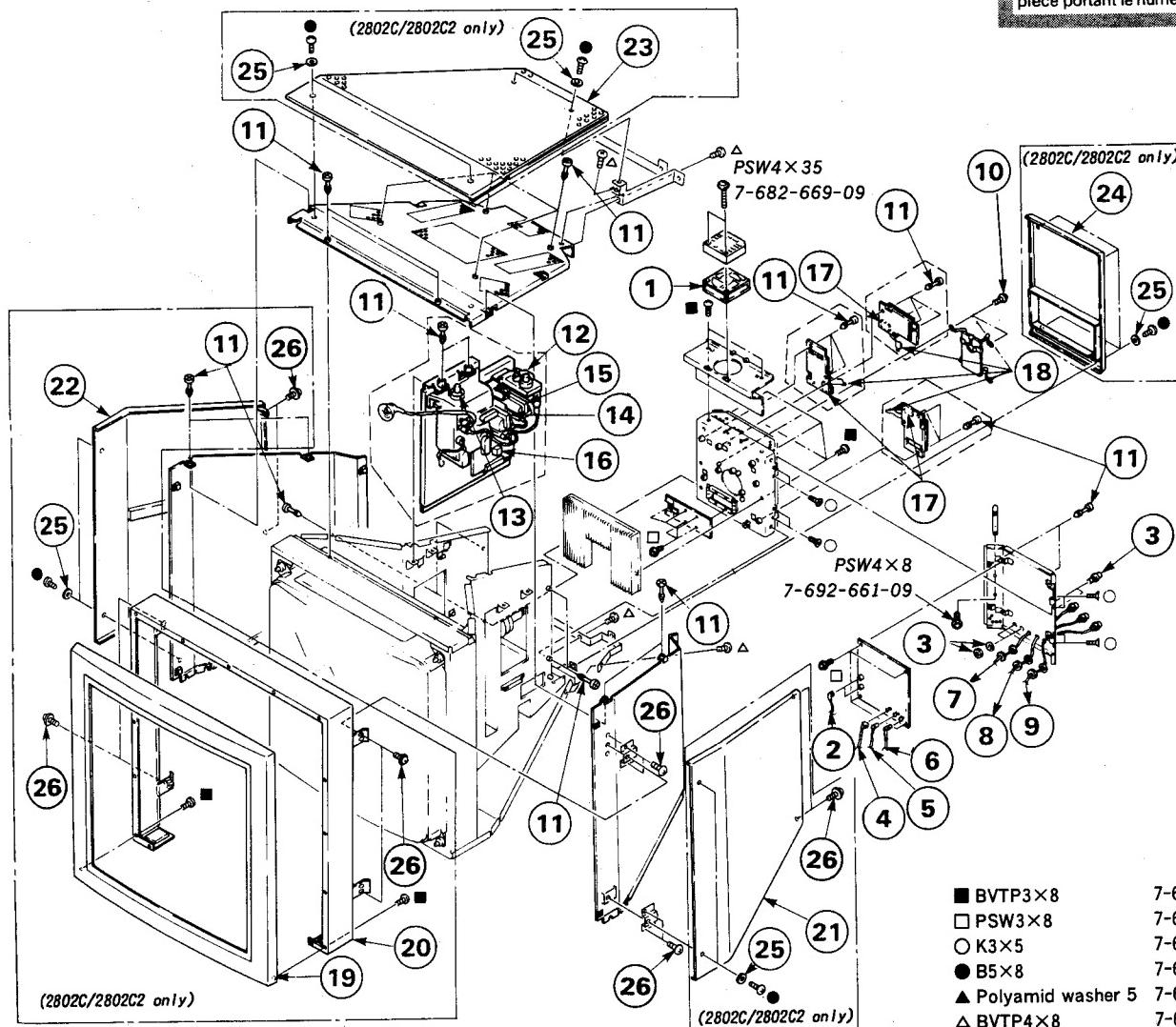
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.

- Items marked " \* " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark  $\Delta$  are critical for safety.  
Replace only with part number specified.

### 7-1. HVK BLOCK AND ABC BLOCK

Les composants identifiés par une trame et une marque  $\Delta$  sont critiques pour la sécurité.  
Ne les remplacer que par une pièce portant le numéro spécifié.



■ BVTP3×8	7-685-646-79
□ PSW3×8	7-682-648-09
○ K3×5	7-682-246-04
● B5×8	7-682-574-04
▲ Polyamid washer 5	7-623-926-11
△ BVTP4×8	7-685-659-79

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
1	$\Delta$ 1-541-449-21	FAN, DC (WITH SENSOR)		14	$\Delta$ 1-439-442-11	TRANSFORMER ASSY FLYBACK	
2	*1-555-110-00	CABLE, PIN		15	$\Delta$ 1-439-445-11	TRANSFORMER ASSY FLYBACK	
3	1-562-576-11	ADAPTER, CONVERSION BNC PIN		16	$\Delta$ 1-439-440-11	TRANSFORMER ASSY FLYBACK	
4	*1-574-162-11	CABLE, CONNECTION		17	*1-629-851-11	AA BOARD	
5	*1-574-163-11	CABLE, CONNECTION		18	*1-628-305-21	AB BOARD	
6	*1-574-164-11	CABLE, CONNECTION		19	4-394-578-02	BEZEL (DDM-2802C/2802C2 only)	
7	*1-574-165-11	CABLE, CONNECTION		20	X-4391-550-1	CABINET ASSY CENTER (DDM-2802C/2802C2 only)	
8	*1-574-166-11	CABLE, CONNECTION		21	4-394-505-11	PANEL (RIGHT) (DDM-2802C/2802C2 only)	
9	*1-574-167-11	CABLE, CONNECTION		22	4-394-504-11	PANEL (LEFT) (DDM-2802C/2802C2 only)	
10	4-382-854-11	SCREW (M3X10), P, SW (+)		23	4-394-501-11	PANEL (TOP) (DDM-2802C/2802C2 only)	
11	4-391-550-01	SCREW (M5X15) (A), LOCK		24	4-394-595-11	PANEL (REAR) (DDM-2802C/2802C2 only)	
12	$\Delta$ 1-238-341-11	RESISTOR ASSY HIGH VOLTAGE		25	4-394-595-01	WASHER, PA (DDM-2802C/2802C2)	
13	$\Delta$ 1-453-111-12	DTC BLOCK HIGH VOLTAGE		26	4-394-596-01	SCREW (M5) TERMINAL (DDM-2802C/2802C2)	

# DDM-2801C/2802C

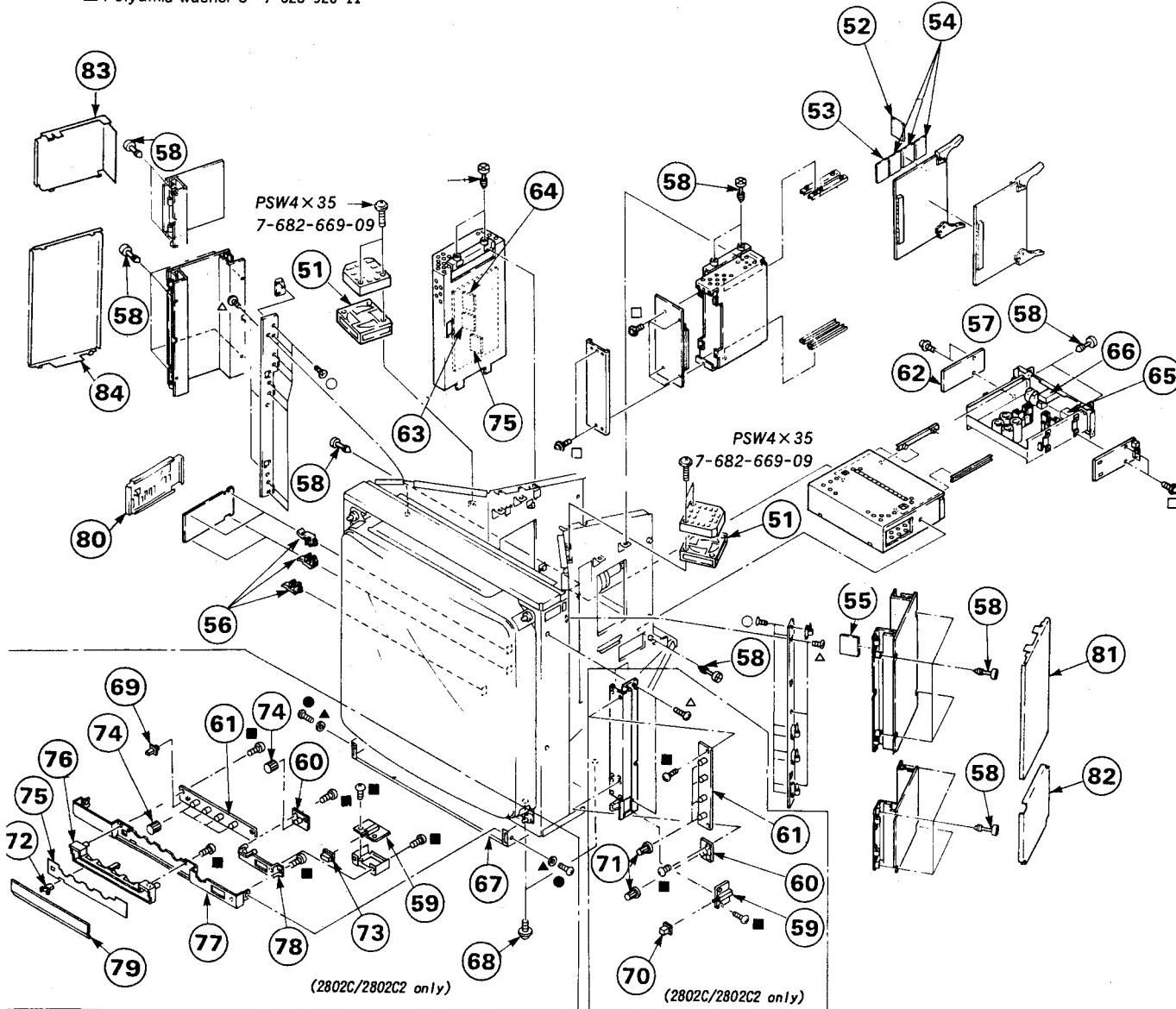
## DDM-2801C2/2802C2

### 7-2. POWER SUPPLY BLOCK AND FHL BLOCK

■ BVTP3X8	7-685-646-79
□ PSW3X8	7-682-648-09
○ K3X5	7-682-246-04
△ BVTP4X8	7-685-659-79
● B5X8	7-682-574-04
▲ Polyamid washer 5	7-623-926-11

Les composants identifiés par une trame et par une marque **▲** sont d'une importance critique pour la sécurité. Ne les remplacer que par des pièces de numéro spécifié.

The components identified by shading and mark **▲** are critical for safety.  
Replace only with part number specified.



#### Ref.No Part No. Description Remark

51	▲ 1-541-449-21	FAN, DC (WITH SENSOR)	
52	* A-1301-815-A	M2A BOARD, COMPLETE	
53	* A-1301-816-A	M2B BOARD, COMPLETE	
54	* A-1301-826-A	M2C BOARD, COMPLETE	
55	* A-1341-279-A	EA BOARD, COMPLETE	
56	* 4-321-929-00	HOLDER, PC BOARD	
57	4-382-854-11	SCREW (M3X10), P, SW (+)	
58	4-391-550-01	SCREW (M5X15) (A), LOCK	
59	* 1-627-354-12	J1 BOARD	
60	1-627-355-12	J2 BOARD	
61	1-627-356-13	J3 BOARD	
62	1-627-365-11	GA BOARD	
63	1-627-366-11	GB BOARD	
64	1-627-367-11	GC BOARD	
65	▲ 1-571-688-11	SWITCH SEESAW (AC POWER)	
66	▲ 1-540-066-11	AC INLET (3 P)	
67	X-4391-556-2	BASE ASSY (DDM-2802C/2802C2 only)	

#### Ref.No Part No. Description Remark

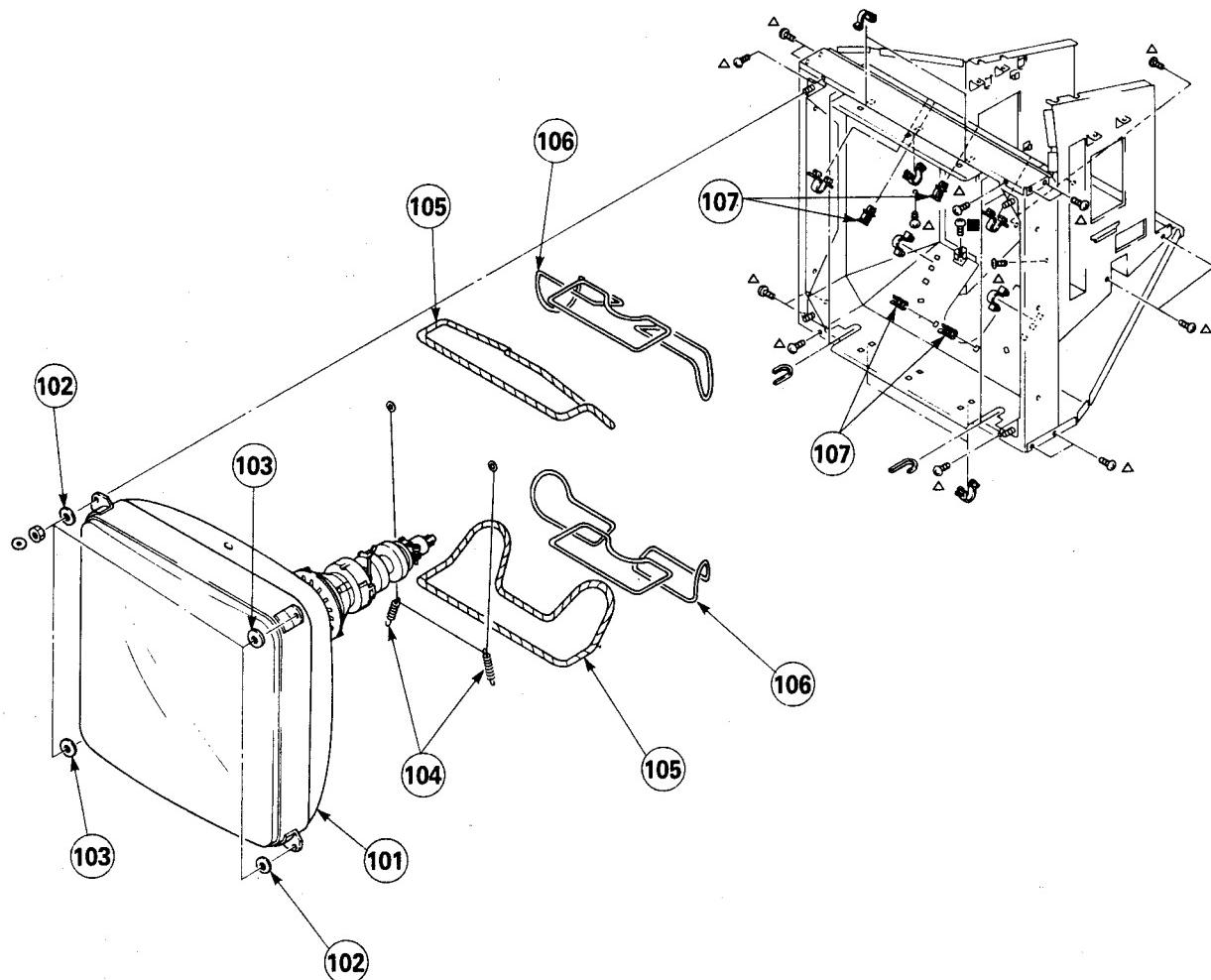
68	4-394-596-01	SCREW (M5) TERMINAL (DDM-2802C/2802C2)	
69	4-322-508-02	PUSH BUTTON (DDM-2802C/2802C2 only)	
70	4-369-627-01	PUSH BUTTON (DDM-2802C/2801C2 only)	
71	4-344-710-00	KNOB CONTROL (DDM-2802C/2802C2 only)	
72	4-352-034-00	CATCH, PUSH (DDM-2802C/2802C2 only)	
73	4-355-703-11	POWER BUTTON (DDM-2802C/2802C2 only)	
74	4-371-801-01	KNOB (DDM-2802C/2802C2 only)	
75	4-391-588-11	LABEL CONTROL (DDM-2802C/2802C2 only)	
76	4-391-589-11	BRACKET (B) CONTROL (DDM-2802C/2802C2 only)	
77	4-391-592-11	PANEL CONTROL (DDM-2802C/2802C2 only)	
78	4-391-594-11	BRACKET (A) CONTROL (DDM-2802C/2802C2 only)	
79	4-391-586-11	DOOR (DDM-2802C/2802C2 only)	
80	* X-4391-563-1	COVER (T) ASSY, PCB	
81	* X-4391-560-1	COVER (E) ASSY, PCB	
82	* 4-391-578-01	COVER (S), PCB	
83	* X-4391-562-1	COVER (P) ASSY, PCB	
84	* X-4391-561-1	COVER (R) ASSY, PCB	

The components identified by shading and mark  $\Delta$  are critical for safety.  
Replace only with part number specified.

Les composants identifiés par une trame et par une marque  $\Delta$  sont d'une importance critique pour la sécurité. Ne les remplacer que par des pièces de numéro spécifié.

### 7-3. PICTURE TUBE

- N8 7-684-028-00
- BVTP3×8 7-685-646-79
- $\Delta$  BVTP4×8 7-685-659-79
- $\nabla$  PSW4×8 7-682-961-01



Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
101	$\Delta$ *8-735-021-71	PICTURE TUBE		105	$\Delta$ 1-426-390-11	COIL, DEMAGNETIZATION	
102	4-391-511-01	WASHER, PICTURE TUBE		106	1-426-389-11	COIL, LANDING CORRECTION	
103	4-391-512-01	WASHER, PICTURE		107	*4-322-922-00	HOLDER, COIL, DEGAUSSER	
104	4-369-318-00	SPRING, TENSION					

NOTE:

The components identified by shading and mark are critical for safety.  
Replace only with part number specified.

Les composants identifiés par une trame et une marque sont critiques pour la sécurité.  
Ne les remplacer que par une pièce portant le numéro spécifié.

## SECTION 8 ELECTRICAL PARTS LIST

- Items marked " \* " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

### RESISTORS

- All resistors are in ohms
- F : nonflammable
- There are some cases the reference number on one board overlaps on the other board. Therefore, when ordering parts by the reference number, please include the board name.

When indicating parts by reference number, please include the board name.

### CAPACITORS

### COILS

- MF :  $\mu$ F, PF :  $\mu\mu$ F      MMH : mH, UH :  $\mu$ H
- The components identified by in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

Ref.No	Part No.	Description	Remark			Ref.No	Part No.	Description	Remark									
<b>B BOARD, COMPLETE</b>																		
*****																		
(DDM-2801C; Serial up-to No. 2,000,043)																		
(DDM-2802C; Serial up-to No. 2,000,020)																		
(DDM-2801C2; Serial up-to No. 2,000,049)																		
(DDM-2802C2; Serial up-to No. 2,000,012)																		
<b>CAPACITOR</b>																		
C1	1-124-034-51	ELECT	33MF	20%	16V	C46	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V							
C2	1-135-152-21	TANTAL. CHIP	1.5MF	20%	25V	C47	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V							
C3	1-135-152-21	TANTAL. CHIP	1.5MF	20%	25V	C48	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V							
C4	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	C49	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V							
C5	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	C50	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V							
C6	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	C51	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V							
C7	1-163-121-00	CERAMIC CHIP	150PF	5%	50V	C52	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V							
C8	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	C53	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V							
C9	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	C54	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V							
C10	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	C55	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V							
C11	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	C56	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V							
C12	1-135-152-21	TANTAL. CHIP	1.5MF	20%	25V	C57	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V							
C13	1-135-152-21	TANTAL. CHIP	1.5MF	20%	25V	C58	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V							
C14	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V	C59	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V							
C15	1-163-105-00	CERAMIC CHIP	33PF	5%	50V	C60	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V							
C16	1-163-109-00	CERAMIC CHIP	47PF	5%	50V	C61	1-163-121-00	CERAMIC CHIP	150PF	5%	50V							
C17	1-163-832-00	CERAMIC CHIP	0.1MF	10%	100V	C62	1-163-088-00	CERAMIC CHIP	5PF	0.25PF	50V							
C18	1-124-131-00	ELECT	47MF	20%	100V	C63	1-123-321-00	ELECT	220MF	20%	16V							
C19	1-135-152-21	TANTAL. CHIP	1.5MF	20%	25V	C64	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V							
C20	1-163-086-00	CERAMIC CHIP	3PF	0.25PF	50V	C65	1-163-113-00	CERAMIC CHIP	68PF	5%	50V							
C21	1-163-085-00	CERAMIC CHIP	2PF	0.25PF	50V	C66	1-126-335-11	ELECT	220MF	20%	10V							
C22	1-163-832-00	CERAMIC CHIP	0.1MF	10%	100V	C67	1-135-092-21	TANTAL. CHIP	3.3MF	20%	16V							
C23	1-163-832-00	CERAMIC CHIP	0.1MF	10%	100V	C68	1-123-333-00	ELECT	100MF	20%	25V							
C24	1-163-832-00	CERAMIC CHIP	0.1MF	10%	100V	C69	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V							
C25	1-126-111-11	ELECT	3.3MF	20%	100V	C70	1-135-092-21	TANTAL. CHIP	3.3MF	20%	16V							
C26	1-124-798-11	ELECT	1MF	20%	160V	C71	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V							
C27	1-124-798-11	ELECT	1MF	20%	160V	C72	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V							
C28	1-124-798-11	ELECT	1MF	20%	160V	C73	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V							
C29	1-124-791-11	ELECT	1MF	20%	100V	C74	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V							
C30	1-124-791-11	ELECT	1MF	20%	100V	C75	1-135-152-21	TANTAL. CHIP	1.5MF	20%	25V							
C31	1-124-791-11	ELECT	1MF	20%	100V	C76	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V							
C32	1-163-109-00	CERAMIC CHIP	47PF	5%	50V	C77	1-163-121-00	CERAMIC CHIP	150PF	5%	50V							
C33	1-135-152-21	TANTAL. CHIP	1.5MF	20%	25V	C78	1-123-875-11	ELECT	10MF	20%	50V							
C34	1-123-321-00	ELECT	220MF	20%	16V	<b>CONNECTOR</b>												
C35	1-163-119-00	CERAMIC CHIP	120PF	5%	50V	CNB-1	* 1-564-511-11	PLUG, CONNECTOR 8P										
C36	1-163-103-00	CERAMIC CHIP	27PF	5%	50V	CNB-2	* 1-564-513-11	PLUG, CONNECTOR 10P										
C37	1-163-097-00	CERAMIC CHIP	15PF	5%	50V	CNB-3	* 1-564-506-11	PLUG, CONNECTOR 3P										
C38	1-135-152-21	TANTAL. CHIP	1.5MF	20%	25V	CNB-4	* 1-564-513-11	PLUG, CONNECTOR 10P										
C39	1-135-152-21	TANTAL. CHIP	1.5MF	20%	25V	CNB-5	* 1-564-513-11	PLUG, CONNECTOR 10P										
C40	1-135-152-21	TANTAL. CHIP	1.5MF	20%	25V	CNB-6	* 1-564-513-11	PLUG, CONNECTOR 10P										
C41	1-135-152-21	TANTAL. CHIP	1.5MF	20%	25V	<b>DIODE</b>												
C42	1-135-152-21	TANTAL. CHIP	1.5MF	20%	25V	D1	8-719-105-82	DIODE RD5.1M-B2										
C43	1-135-152-21	TANTAL. CHIP	1.5MF	20%	25V	D3	8-719-911-19	DIODE ISS119										
C44	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	D4	8-719-901-83	DIODE ISS83										
C45	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	D5	8-719-901-83	DIODE ISS83										
						D6	8-719-901-83	DIODE ISS83										
						D7	8-719-812-41	DIODE TLR124										
						D8	8-719-106-53	DIODE RD10M-B2										
						D9	8-719-800-76	DIODE ISS226										
						D10	8-719-106-80	DIODE RD13M-B2										
						D11	8-719-106-80	DIODE RD13M-B2										
						D12	8-719-800-76	DIODE ISS226										
						D13	8-719-101-97	DIODE ISS97-1										

**B**

<u>Ref.No</u>	<u>Part No.</u>	<u>Description</u>	<u>Remark</u>	<u>Ref.No</u>	<u>Part No.</u>	<u>Description</u>	<u>Remark</u>																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
<b>IC</b>																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
IC1	8-759-906-75	IC 74F194PC		Q17	8-729-105-68	TRANSISTOR 2SC3356																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
IC2	8-759-935-13	IC SN74AS00N		Q18	8-729-105-68	TRANSISTOR 2SC3356																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
IC3	8-759-906-75	IC 74F194PC		Q19	8-729-105-68	TRANSISTOR 2SC3356																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
IC4	8-759-904-80	IC 74F04PC		Q20	8-729-105-68	TRANSISTOR 2SC3356																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
IC5	8-759-784-92	IC MB7118H-SG		Q21	8-729-105-68	TRANSISTOR 2SC3356																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
* IC6	* 1-526-656-00	SOCKET, IC (DP) 20P (IC5)		Q22	8-729-105-68	TRANSISTOR 2SC3356																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
	8-759-935-16	IC SN74AS08N		Q23	8-729-112-65	TRANSISTOR 2SA1462																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
IC7	8-759-915-93	IC 74F163APC		Q24	8-729-920-63	TRANSISTOR DTA123EK																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
IC8	8-759-935-14	IC SN74AS02N		Q25	8-729-920-65	TRANSISTOR DTC123EK																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
IC9	8-759-915-93	IC 74F163APC		Q26	8-729-920-65	TRANSISTOR DTC123EK																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
IC10	8-759-935-13	IC SN74AS00N		<b>RESISTOR</b>																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
IC11	8-759-906-66	IC 74F86PC		IC12	8-759-906-67	IC 74F109PC	R1	1-216-025-00	METAL GLAZE	100	5%	1/10W	IC13	8-759-915-93	IC 74F163APC	R2	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	IC14	8-752-321-64	IC CXD1067P	R5	1-216-025-00	METAL GLAZE	100	5%	1/10W	IC15	8-759-203-40	IC TC74HC393P	R6	1-216-025-00	METAL GLAZE	100	5%	1/10W	IC16	8-759-002-44	IC MC74F521N	R7	1-214-837-11	METAL	75	1%	1/2W	IC17	8-759-202-74	IC TC74HC04P	R8	1-214-837-11	METAL	75	1%	1/2W	IC18	8-759-203-40	IC TC74HC393P	R9	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	IC19	8-752-321-64	IC CXD1067P	R10	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	IC20	8-759-202-32	IC TC74HC163P	R11	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	IC21	8-759-203-61	IC TC74HC688P	R12	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	IC22	8-759-203-21	IC TC74HC273P	R13	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	IC23	8-759-784-90	IC MBM27C64-25-SG	R14	1-216-043-00	METAL GLAZE	560	5%	1/10W	* IC24	* 1-526-659-00	SOCKET, IC (DP) 28P (IC23)	R15	1-249-405-11	CARBON	100	5%	1/4W F	IC25	8-759-977-78	IC MB88342P	R16	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W		8-759-145-58	IC UPC4558C	R17	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	IC26	8-759-145-58	IC UPC4558C	R18	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	IC27	8-759-145-58	IC UPC4558C	R19	1-216-049-00	METAL GLAZE	1K	5%	1/10W	IC28	8-759-202-11	IC TC74HC00P	R20	1-216-073-00	METAL GLAZE	10K	5%	1/10W	IC29	8-759-901-57	IC SN74LS157N	R21	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	IC30	8-759-206-68	IC TC40103BP	R22	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W	IC31	8-759-202-86	IC TC74HC123P	R23	1-216-073-00	METAL GLAZE	10K	5%	1/10W	IC32	8-759-004-63	IC MC74HC125N	R24	1-216-073-00	METAL GLAZE	10K	5%	1/10W	IC33	8-759-208-17	IC TC4528BPHB	R25	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W	<b>JACK</b>								J1	* 1-564-433-21	CONNECTOR, COAXIAL	R26	1-216-073-00	METAL GLAZE	10K	5%	1/10W	J2	* 1-564-433-21	CONNECTOR, COAXIAL	R27	1-216-073-00	METAL GLAZE	10K	5%	1/10W	J3	* 1-564-433-21	CONNECTOR, COAXIAL	R28	1-216-105-00	METAL GLAZE	220K	5%	1/10W	J4	1-526-575-00	SOCKET, PLUG 1P	R29	1-216-461-00	METAL OXIDE	5.6K	5%	2W F	J5	1-526-575-00	SOCKET, PLUG 1P	R30	1-216-438-11	METAL OXIDE	8.2K	5%	1W F	<b>COIL</b>								L1	1-410-470-11	INDUCTOR	R31	1-249-397-11	CARBON	22	5%	1/4W	L2	1-421-421-00	COIL, CHOKE	R32	1-249-397-11	CARBON	22	5%	1/4W	L3	1-421-421-00	COIL, CHOKE	R33	1-249-397-11	CARBON	22	5%	1/4W	L4	1-421-421-00	COIL, CHOKE	R34	1-249-437-11	CARBON	47K	5%	1/4W	L5	1-410-468-11	INDUCTOR	R35	1-215-493-00	METAL	1M	1%	1/6W	<b>TRANSISTOR</b>								Q1	8-729-920-65	TRANSISTOR DTC123EK	R36	1-215-493-00	METAL	1M	1%	1/6W	Q3	8-729-100-66	TRANSISTOR 2SC1623	R37	1-215-493-00	METAL	1M	1%	1/6W	Q4	8-729-216-22	TRANSISTOR 2SA1162	R38	1-216-025-00	METAL GLAZE	100	5%	1/10W	Q5	8-729-100-66	TRANSISTOR 2SC1623	R39	1-216-025-00	METAL GLAZE	100	5%	1/10W	Q6	8-729-216-22	TRANSISTOR 2SA1162	R40	1-216-025-00	METAL GLAZE	100	5%	1/10W	Q7	8-729-100-66	TRANSISTOR 2SC1623	R41	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W	Q8	8-729-216-22	TRANSISTOR 2SA1162	R42	1-216-097-00	METAL GLAZE	100K	5%	1/10W	Q9	8-729-105-08	TRANSISTOR 2SA1330	R43	1-216-049-00	METAL GLAZE	1K	5%	1/10W	Q10	8-729-891-02	TRANSISTOR 2SC2910	R44	1-216-049-00	METAL GLAZE	1K	5%	1/10W	Q11	8-729-105-08	TRANSISTOR 2SA1330	R45	1-216-049-00	METAL GLAZE	1K	5%	1/10W	Q12	8-729-105-08	TRANSISTOR 2SA1330	R46	1-216-097-00	METAL GLAZE	100K	5%	1/10W	Q13	8-729-920-45	TRANSISTOR VN1316N3	R47	1-216-097-00	METAL GLAZE	100K	5%	1/10W	Q14	8-729-100-66	TRANSISTOR 2SC1623	R49	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	Q15	8-729-105-68	TRANSISTOR 2SC3356	R50	1-216-081-00	METAL GLAZE	22K	5%	1/10W	Q16	8-729-105-68	TRANSISTOR 2SC3356	R51	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W				R52	1-216-093-00	METAL GLAZE	68K	5%	1/10W				R53	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W				R54	1-216-091-00	METAL GLAZE	56K	5%	1/10W				R55	1-216-107-00	METAL GLAZE	270K	5%	1/10W				R56	1-216-093-00	METAL GLAZE	68K	5%	1/10W				R57	1-216-093-00	METAL GLAZE	68K	5%	1/10W				R58	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W
IC12	8-759-906-67	IC 74F109PC	R1	1-216-025-00	METAL GLAZE	100	5%	1/10W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
IC13	8-759-915-93	IC 74F163APC	R2	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
IC14	8-752-321-64	IC CXD1067P	R5	1-216-025-00	METAL GLAZE	100	5%	1/10W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
IC15	8-759-203-40	IC TC74HC393P	R6	1-216-025-00	METAL GLAZE	100	5%	1/10W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
IC16	8-759-002-44	IC MC74F521N	R7	1-214-837-11	METAL	75	1%	1/2W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
IC17	8-759-202-74	IC TC74HC04P	R8	1-214-837-11	METAL	75	1%	1/2W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
IC18	8-759-203-40	IC TC74HC393P	R9	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
IC19	8-752-321-64	IC CXD1067P	R10	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
IC20	8-759-202-32	IC TC74HC163P	R11	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
IC21	8-759-203-61	IC TC74HC688P	R12	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
IC22	8-759-203-21	IC TC74HC273P	R13	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
IC23	8-759-784-90	IC MBM27C64-25-SG	R14	1-216-043-00	METAL GLAZE	560	5%	1/10W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
* IC24	* 1-526-659-00	SOCKET, IC (DP) 28P (IC23)	R15	1-249-405-11	CARBON	100	5%	1/4W F																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
IC25	8-759-977-78	IC MB88342P	R16	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
	8-759-145-58	IC UPC4558C	R17	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
IC26	8-759-145-58	IC UPC4558C	R18	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
IC27	8-759-145-58	IC UPC4558C	R19	1-216-049-00	METAL GLAZE	1K	5%	1/10W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
IC28	8-759-202-11	IC TC74HC00P	R20	1-216-073-00	METAL GLAZE	10K	5%	1/10W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
IC29	8-759-901-57	IC SN74LS157N	R21	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
IC30	8-759-206-68	IC TC40103BP	R22	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
IC31	8-759-202-86	IC TC74HC123P	R23	1-216-073-00	METAL GLAZE	10K	5%	1/10W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
IC32	8-759-004-63	IC MC74HC125N	R24	1-216-073-00	METAL GLAZE	10K	5%	1/10W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
IC33	8-759-208-17	IC TC4528BPHB	R25	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
<b>JACK</b>																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
J1	* 1-564-433-21	CONNECTOR, COAXIAL	R26	1-216-073-00	METAL GLAZE	10K	5%	1/10W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
J2	* 1-564-433-21	CONNECTOR, COAXIAL	R27	1-216-073-00	METAL GLAZE	10K	5%	1/10W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
J3	* 1-564-433-21	CONNECTOR, COAXIAL	R28	1-216-105-00	METAL GLAZE	220K	5%	1/10W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
J4	1-526-575-00	SOCKET, PLUG 1P	R29	1-216-461-00	METAL OXIDE	5.6K	5%	2W F																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
J5	1-526-575-00	SOCKET, PLUG 1P	R30	1-216-438-11	METAL OXIDE	8.2K	5%	1W F																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
<b>COIL</b>																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
L1	1-410-470-11	INDUCTOR	R31	1-249-397-11	CARBON	22	5%	1/4W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
L2	1-421-421-00	COIL, CHOKE	R32	1-249-397-11	CARBON	22	5%	1/4W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
L3	1-421-421-00	COIL, CHOKE	R33	1-249-397-11	CARBON	22	5%	1/4W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
L4	1-421-421-00	COIL, CHOKE	R34	1-249-437-11	CARBON	47K	5%	1/4W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
L5	1-410-468-11	INDUCTOR	R35	1-215-493-00	METAL	1M	1%	1/6W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
<b>TRANSISTOR</b>																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
Q1	8-729-920-65	TRANSISTOR DTC123EK	R36	1-215-493-00	METAL	1M	1%	1/6W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
Q3	8-729-100-66	TRANSISTOR 2SC1623	R37	1-215-493-00	METAL	1M	1%	1/6W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
Q4	8-729-216-22	TRANSISTOR 2SA1162	R38	1-216-025-00	METAL GLAZE	100	5%	1/10W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
Q5	8-729-100-66	TRANSISTOR 2SC1623	R39	1-216-025-00	METAL GLAZE	100	5%	1/10W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
Q6	8-729-216-22	TRANSISTOR 2SA1162	R40	1-216-025-00	METAL GLAZE	100	5%	1/10W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
Q7	8-729-100-66	TRANSISTOR 2SC1623	R41	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
Q8	8-729-216-22	TRANSISTOR 2SA1162	R42	1-216-097-00	METAL GLAZE	100K	5%	1/10W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
Q9	8-729-105-08	TRANSISTOR 2SA1330	R43	1-216-049-00	METAL GLAZE	1K	5%	1/10W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
Q10	8-729-891-02	TRANSISTOR 2SC2910	R44	1-216-049-00	METAL GLAZE	1K	5%	1/10W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
Q11	8-729-105-08	TRANSISTOR 2SA1330	R45	1-216-049-00	METAL GLAZE	1K	5%	1/10W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
Q12	8-729-105-08	TRANSISTOR 2SA1330	R46	1-216-097-00	METAL GLAZE	100K	5%	1/10W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
Q13	8-729-920-45	TRANSISTOR VN1316N3	R47	1-216-097-00	METAL GLAZE	100K	5%	1/10W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
Q14	8-729-100-66	TRANSISTOR 2SC1623	R49	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
Q15	8-729-105-68	TRANSISTOR 2SC3356	R50	1-216-081-00	METAL GLAZE	22K	5%	1/10W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
Q16	8-729-105-68	TRANSISTOR 2SC3356	R51	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
			R52	1-216-093-00	METAL GLAZE	68K	5%	1/10W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
			R53	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
			R54	1-216-091-00	METAL GLAZE	56K	5%	1/10W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
			R55	1-216-107-00	METAL GLAZE	270K	5%	1/10W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
			R56	1-216-093-00	METAL GLAZE	68K	5%	1/10W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
			R57	1-216-093-00	METAL GLAZE	68K	5%	1/10W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
			R58	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		

**DDM-2801C/2802C**  
**DDM-2801C2/2802C2**

**B U**

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark		
R59	1-216-107-00	METAL GLAZE	270K 5%	1/10W	R125	1-216-073-00	METAL GLAZE	10K 5%	1/10W
R60	1-216-091-00	METAL GLAZE	56K 5%	1/10W	R127	1-216-029-00	METAL GLAZE	150 5%	1/10W
R61	1-216-093-00	METAL GLAZE	68K 5%	1/10W					
R62	1-216-069-00	METAL GLAZE	6.8K 5%	1/10W					
R63	1-216-093-00	METAL GLAZE	68K 5%	1/10W					
R64	1-216-091-00	METAL GLAZE	56K 5%	1/10W					
R65	1-216-107-00	METAL GLAZE	270K 5%	1/10W					
R66	1-216-093-00	METAL GLAZE	68K 5%	1/10W					
R67	1-215-453-00	METAL	22K 1%	1/6W					
R68	1-215-453-00	METAL	22K 1%	1/6W					
R69	1-215-453-00	METAL	22K 1%	1/6W					
R70	1-216-049-00	METAL GLAZE	1K 5%	1/10W					
R71	1-216-049-00	METAL GLAZE	1K 5%	1/10W					
R72	1-216-081-00	METAL GLAZE	22K 5%	1/10W					
R73	1-216-081-00	METAL GLAZE	22K 5%	1/10W					
R74	1-216-049-00	METAL GLAZE	1K 5%	1/10W					
R75	1-216-049-00	METAL GLAZE	1K 5%	1/10W					
R76	1-216-081-00	METAL GLAZE	22K 5%	1/10W					
R77	1-216-081-00	METAL GLAZE	22K 5%	1/10W					
R78	1-216-081-00	METAL GLAZE	22K 5%	1/10W					
R79	1-216-081-00	METAL GLAZE	22K 5%	1/10W					
R80	1-216-065-00	METAL GLAZE	4.7K 5%	1/10W					
R81	1-216-065-00	METAL GLAZE	4.7K 5%	1/10W					
R82	1-216-031-00	METAL GLAZE	180 5%	1/10W					
R83	1-216-009-00	METAL GLAZE	22 5%	1/10W					
R84	1-216-041-00	METAL GLAZE	470 5%	1/10W					
R85	1-216-001-00	METAL GLAZE	10 5%	1/10W					
R86	1-216-073-00	METAL GLAZE	10K 5%	1/10W					
R87	1-216-027-00	METAL GLAZE	120 5%	1/10W					
R88	1-216-041-00	METAL GLAZE	470 5%	1/10W					
R89	1-216-043-00	METAL GLAZE	560 5%	1/10W					
R90	1-216-053-00	METAL GLAZE	1.5K 5%	1/10W					
R91	1-216-021-00	METAL GLAZE	68 5%	1/10W					
R92	1-216-035-00	METAL GLAZE	270 5%	1/10W					
R93	1-216-017-00	METAL GLAZE	47 5%	1/10W					
R94	1-216-035-00	METAL GLAZE	270 5%	1/10W					
R95	1-216-017-00	METAL GLAZE	47 5%	1/10W					
R96	1-216-063-00	METAL GLAZE	3.9K 5%	1/10W					
R97	1-216-017-00	METAL GLAZE	47 5%	1/10W					
R98	1-216-081-00	METAL GLAZE	22K 5%	1/10W					
R99	1-216-017-00	METAL GLAZE	47 5%	1/10W					
R100	1-216-017-00	METAL GLAZE	47 5%	1/10W					
R101	1-216-031-00	METAL GLAZE	180 5%	1/10W					
R102	1-216-025-00	METAL GLAZE	100 5%	1/10W					
R103	1-216-043-00	METAL GLAZE	560 5%	1/10W					
R104	1-216-180-00	METAL GLAZE	180 5%	1/8W					
R105	1-216-180-00	METAL GLAZE	180 5%	1/8W					
R106	1-216-041-00	METAL GLAZE	470 5%	1/10W					
R107	1-216-045-00	METAL GLAZE	680 5%	1/10W					
R108	1-216-009-00	METAL GLAZE	22 5%	1/10W					
R109	1-216-059-00	METAL GLAZE	2.7K 5%	1/10W					
R110	1-216-206-00	METAL GLAZE	2.2K 5%	1/8W					
R111	1-216-206-00	METAL GLAZE	2.2K 5%	1/8W					
R112	1-216-025-00	METAL GLAZE	100 5%	1/10W					
R113	1-216-041-00	METAL GLAZE	470 5%	1/10W					
R114	1-216-081-00	METAL GLAZE	22K 5%	1/10W					
R115	1-216-081-00	METAL GLAZE	22K 5%	1/10W					
R117	1-216-017-00	METAL GLAZE	47 5%	1/10W					
R118	1-216-093-00	METAL GLAZE	68K 5%	1/10W					
R119	1-216-081-00	METAL GLAZE	22K 5%	1/10W					
R120	1-216-017-00	METAL GLAZE	47 5%	1/10W					
R121	1-216-017-00	METAL GLAZE	47 5%	1/10W					
R122	1-216-037-00	METAL GLAZE	330 5%	1/10W					
R123	1-216-057-00	METAL GLAZE	2.2K 5%	1/10W					
R124	1-216-073-00	METAL GLAZE	10K 5%	1/10W					
<b>VARIABLE RESISTOR</b>									
RV1	1-237-518-21	RES, ADJ, CERMET 10K							
RV2	1-237-515-21	RES, ADJ, CERMET 1K							
RV3	1-237-513-21	RES, ADJ, CERMET 200							
RV4	1-237-517-21	RES, ADJ, CERMET 5K							
<b>SWITCH</b>									
SW1	1-571-428-11	SWITCH, SLIDE							
<b>THERMISTOR</b>									
TH-1	1-800-279-21	THERMISTOR 5.0K							
<b>CRYSTAL</b>									
X1	1-577-212-11	VIBRATOR, CRYSTAL							
<b>U BOARD, COMPLETE</b>									
*****									
(DDM-2801C; Serial up-to No. 2,000,043)									
(DDM-2802C; Serial up-to No. 2,000,020)									
(DDM-2801C2; Serial up-to No. 2,000,049)									
(DDM-2802C2; Serial up-to No. 2,000,012)									
<b>CAPACITOR</b>									
C1	1-135-152-21	TANTAL CHIP	1.5MF	10%	25V				
C2	1-135-152-21	TANTAL CHIP	1.5MF	10%	25V				
C3	1-135-152-21	TANTAL CHIP	1.5MF	10%	25V				
C4	1-135-152-21	TANTAL CHIP	1.5MF	10%	25V				
<b>CONNECTOR</b>									
CNU-4*1-564-511-11		PLUG, CONNECTOR 8P							
CNU-5*1-564-505-11		PLUG, CONNECTOR 2P							
CNU-6*1-564-513-11		PLUG, CONNECTOR 10P							
<b>FILTER</b>									
CP2	1-236-071-11	ENCAPSULATED COMPONENT							
CP3	1-236-071-11	ENCAPSULATED COMPONENT							
CP4	1-236-071-11	ENCAPSULATED COMPONENT							
CP5	1-236-071-11	ENCAPSULATED COMPONENT							
CP6	1-236-071-11	ENCAPSULATED COMPONENT							
CP7	1-236-071-11	ENCAPSULATED COMPONENT							
CP8	1-236-071-11	ENCAPSULATED COMPONENT							
CP9	1-236-071-11	ENCAPSULATED COMPONENT							
CP11	1-236-129-11	ENCAPSULATED COMPONENT							
CP12	1-236-129-11	ENCAPSULATED COMPONENT							
CP13	1-236-129-11	ENCAPSULATED COMPONENT							
CP14	1-236-129-11	ENCAPSULATED COMPONENT							
CP15	1-236-129-11	ENCAPSULATED COMPONENT							
CP16	1-236-129-11	ENCAPSULATED COMPONENT							
<b>IC</b>									
IC1	8-759-929-62	IC LM7812CT							
	*4-381-906-01	SPRING (F) (IC1)							
	4-391-519-01	SHEET (E), INSULATOR (IC1)							
IC2	8-759-929-65	IC LM7912CT							
	*4-381-906-01	SPRING (F) (IC2)							
	4-391-519-01	SHEET (E), INSULATOR (IC2)							

DDM-2801C/2802C  
DDM-2801C2/2802C2

B

Ref.No	Part No.	Description	Remark			Ref.No	Part No.	Description	Remark								
<b>B BOARD COMPLETE</b>																	
***** DDM-2801C; Serial No. 2,000,044 and higher DDM-2802C; Serial No. 2,000,021 and higher DDM-2801C2; Serial No. 2,000,050 and higher DDM-2802C2; Serial No. 2,000,013 and higher																	
<b>CAPACITOR</b>																	
C1	1-124-034-51	ELECT	33MF	20%	16V	C68	1-124-122-11	ELECT	100MF	20%	25V						
C2	1-135-152-21	TANTAL CHIP	1.5MF	20%	25V	C69	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V						
C3	1-135-152-21	TANTAL CHIP	1.5MF	20%	25V	C70	1-135-092-21	TANTAL CHIP	3.3MF	20%	16V						
C4	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	C71	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V						
C5	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	C72	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V						
C6	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	C73	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V						
C7	1-163-121-00	CERAMIC CHIP	150PF	5%	50V	C74	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V						
C8	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	C75	1-135-152-21	TANTAL CHIP	1.5MF	20%	25V						
C9	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	C76	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V						
C10	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	C78	1-123-875-11	ELECT	10MF	20%	50V						
<b>PLUG</b>																	
CNB-1 * 1-564-511-11 CONNECTOR PLUG 8P CNB-2 * 1-564-513-11 CONNECTOR PLUG 10P CNB-3 * 1-564-506-11 CONNECTOR PLUG 3P CNB-4 * 1-564-513-11 CONNECTOR PLUG 10P CNB-5 * 1-564-513-11 CONNECTOR PLUG 10P																	
CNB-6 * 1-564-513-11 CONNECTOR PLUG 10P																	
<b>DIODE</b>																	
D1	8-719-105-82	DIODE	RD5.1M-B2			D3	8-719-911-19	DIODE	ISS119								
D4	8-719-901-83	DIODE	ISS83			D5	8-719-901-83	DIODE	ISS83								
D6	8-719-901-83	DIODE	ISS83			D7	8-719-812-41	DIODE	TLR124								
D8	8-719-106-53	DIODE	RD10M-B2			D9	8-719-800-76	DIODE	ISS226								
D10	8-719-106-80	DIODE	RD13M-B2			D11	8-719-106-80	DIODE	RD13M-B2								
D12	8-719-800-76	DIODE	ISS226														
<b>IC</b>																	
IC1	8-752-335-54	IC	CXD2007S			IC2	8-759-935-13	IC	SN74AS00N								
IC8	8-759-935-23	IC	SN74AS32N			IC11	8-759-906-66	IC	74F86PC								
IC11	8-759-906-66	IC	74F86PC			IC24	8-759-977-78	IC	MB88342P								
IC25	8-759-145-58	IC	UPC4558C			IC26	8-759-145-58	IC	UPC4558C								
IC27	8-759-145-58	IC	UPC4558C			IC28	8-759-202-11	IC	TC74HC00P								
IC29	8-759-901-57	IC	SN74LS157N			IC30	8-759-206-68	IC	TC40103BP								
IC31	8-759-202-86	IC	TC74HC123P			IC32	8-759-004-63	IC	MC74HC125N								
IC33	8-759-208-17	IC	TC4528BPHB														
<b>CONNECTOR</b>																	
J1	*1-564-433-21	CONNECTOR, COAXIAL				J2	*1-564-433-21	CONNECTOR, COAXIAL									
J3	*1-564-433-21	CONNECTOR, COAXIAL				J4	1-526-575-00	SOCKET PLUG 1P									
J5	1-526-575-00	SOCKET PLUG 1P															
C67	1-135-092-21	TANTAL CHIP	3.3MF	20%	16V												

**DDM-2801C/2802C  
DDM-2801C2/2802C2**

**B**

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
<u>COIL</u>							
L1	1-410-470-11	INDUCTOR	10UH	R33	1-249-397-11	CARBON	22 5% 1/4W
L2	1-421-421-00	COIL CHOKE	100UH	R34	1-249-437-11	CARBON	47K 5% 1/4W
L3	1-421-421-00	COIL CHOKE	100UH	R35	1-215-493-00	METAL	1M 1% 1/6W
L4	1-421-421-00	COIL CHOKE	100UH	R36	1-215-493-00	METAL	1M 1% 1/6W
L5	1-410-468-11	INDUCTOR	6.8UH	R37	1-215-493-00	METAL	1M 1% 1/6W
<u>TRANSISTOR</u>							
Q1	8-729-920-65	TRANSISTOR	DTC123EK	R38	1-216-025-00	METAL GLAZE	100 5% 1/10W
Q3	8-729-100-66	TRANSISTOR	2SC1623	R39	1-216-025-00	METAL GLAZE	100 5% 1/10W
Q4	8-729-216-22	TRANSISTOR	2SA1162	R40	1-216-025-00	METAL GLAZE	100 5% 1/10W
Q5	8-729-100-66	TRANSISTOR	2SC1623	R41	1-216-051-00	METAL GLAZE	1.2K 5% 1/10W
Q6	8-729-216-22	TRANSISTOR	2SA1162	R42	1-216-097-00	METAL GLAZE	100K 5% 1/10W
Q7	8-729-100-66	TRANSISTOR	2SC1623	R43	1-216-049-00	METAL GLAZE	1K 5% 1/10W
Q8	8-729-216-22	TRANSISTOR	2SA1162	R44	1-216-049-00	METAL GLAZE	1K 5% 1/10W
Q9	8-729-105-08	TRANSISTOR	2SA1330	R45	1-216-049-00	METAL GLAZE	1K 5% 1/10W
Q10	8-729-891-02	TRANSISTOR	2SC2910	R46	1-216-097-00	METAL GLAZE	100K 5% 1/10W
Q11	8-729-105-08	TRANSISTOR	2SA1330	R47	1-216-097-00	METAL GLAZE	100K 5% 1/10W
Q12	8-729-105-08	TRANSISTOR	2SA1330	R49	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W
Q13	8-729-920-45	TRANSISTOR	VN1316N3	R50	1-216-081-00	METAL GLAZE	22K 5% 1/10W
Q14	8-729-100-66	TRANSISTOR	2SC1623	R51	1-216-059-00	METAL GLAZE	2.7K 5% 1/10W
Q15	8-729-105-68	TRANSISTOR	2SC3356	R52	1-216-093-00	METAL GLAZE	68K 5% 1/10W
Q16	8-729-105-68	TRANSISTOR	2SC3356	R53	1-216-069-00	METAL GLAZE	6.8K 5% 1/10W
Q17	8-729-105-68	TRANSISTOR	2SC3356	R54	1-216-091-00	METAL GLAZE	56K 5% 1/10W
Q18	8-729-105-68	TRANSISTOR	2SC3356	R55	1-216-107-00	METAL GLAZE	270K 5% 1/10W
Q19	8-729-105-68	TRANSISTOR	2SC3356	R56	1-216-093-00	METAL GLAZE	68K 5% 1/10W
Q20	8-729-105-68	TRANSISTOR	2SC3356	R57	1-216-093-00	METAL GLAZE	68K 5% 1/10W
Q21	8-729-105-68	TRANSISTOR	2SC3356	R58	1-216-069-00	METAL GLAZE	6.8K 5% 1/10W
Q22	8-729-105-68	TRANSISTOR	2SC3356	R59	1-216-107-00	METAL GLAZE	270K 5% 1/10W
Q23	8-729-112-65	TRANSISTOR	2SA1462	R60	1-216-091-00	METAL GLAZE	56K 5% 1/10W
Q24	8-729-920-63	TRANSISTOR	DTA123EK	R61	1-216-093-00	METAL GLAZE	68K 5% 1/10W
Q25	8-729-920-65	TRANSISTOR	DTC123EK	R62	1-216-069-00	METAL GLAZE	6.8K 5% 1/10W
Q26	8-729-920-65	TRANSISTOR	DTC123EK	R63	1-216-093-00	METAL GLAZE	68K 5% 1/10W
Q27	8-729-920-65	TRANSISTOR	DTC123EK	R64	1-216-091-00	METAL GLAZE	56K 5% 1/10W
<u>RESISTOR</u>							
R1	1-216-025-00	METAL GLAZE	100 5% 1/10W	R65	1-216-107-00	METAL GLAZE	270K 5% 1/10W
R2	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W	R66	1-216-093-00	METAL GLAZE	68K 5% 1/10W
R5	1-216-025-00	METAL GLAZE	100 5% 1/10W	R67	1-215-453-00	METAL	22K 1% 1/6W
R6	1-216-025-00	METAL GLAZE	100 5% 1/10W	R68	1-215-453-00	METAL	22K 1% 1/6W
R7	1-214-837-11	METAL	75 1% 1/2W	R69	1-215-453-00	METAL	22K 1% 1/6W
R8	1-214-837-11	METAL	75 1% 1/2W	R70	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R9	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W	R71	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R10	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W	R72	1-216-017-00	METAL GLAZE	47 5% 1/10W
R11	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	R73	1-216-017-00	METAL GLAZE	47 5% 1/10W
R12	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W	R76	1-216-001-00	METAL GLAZE	10 5% 1/10W
R13	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W	R80	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W
R14	1-216-043-00	METAL GLAZE	560 5% 1/10W	R81	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W
R15	1-249-405-11	CARBON	100 5% 1/4W F	R83	1-216-009-00	METAL GLAZE	22 5% 1/10W
R16	1-216-061-00	METAL GLAZE	3.3K 5% 1/10W	R84	1-216-041-00	METAL GLAZE	470 5% 1/10W
R17	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	R85	1-216-029-00	METAL GLAZE	150 5% 1/10W
R18	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	R86	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R19	1-216-049-00	METAL GLAZE	1K 5% 1/10W	R87	1-216-027-00	METAL GLAZE	120 5% 1/10W
R20	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R88	1-216-035-00	METAL GLAZE	270 5% 1/10W
R21	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	R89	1-216-043-00	METAL GLAZE	560 5% 1/10W
R22	1-216-067-00	METAL GLAZE	5.6K 5% 1/10W	R90	1-216-053-00	METAL GLAZE	1.5K 5% 1/10W
R23	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R91	1-216-021-00	METAL GLAZE	68 5% 1/10W
R24	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R92	1-216-035-00	METAL GLAZE	270 5% 1/10W
R25	1-216-067-00	METAL GLAZE	5.6K 5% 1/10W	R93	1-216-017-00	METAL GLAZE	47 5% 1/10W
R26	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R94	1-216-035-00	METAL GLAZE	270 5% 1/10W
R27	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R95	1-216-017-00	METAL GLAZE	47 5% 1/10W
R28	1-216-461-00	METAL OXIDE	5.6K 5% 2W F	R96	1-216-063-00	METAL GLAZE	3.9K 5% 1/10W
R29	1-216-438-11	METAL OXIDE	8.2K 5% 1W F	R97	1-216-017-00	METAL GLAZE	47 5% 1/10W
R30	1-249-397-11	CARBON	22 5% 1/4W	R98	1-216-081-00	METAL GLAZE	22K 5% 1/10W
R31	1-249-397-11	CARBON	22 5% 1/4W	R99	1-216-017-00	METAL GLAZE	47 5% 1/10W
R32	1-249-397-11	CARBON	22 5% 1/4W	R100	1-216-017-00	METAL GLAZE	47 5% 1/10W
				R101	1-216-031-00	METAL GLAZE	180 5% 1/10W
				R102	1-216-025-00	METAL GLAZE	100 5% 1/10W
				R103	1-216-043-00	METAL GLAZE	560 5% 1/10W
				R104	1-216-180-00	METAL GLAZE	180 5% 1/8W

**B**      **A**

<u>Ref.No</u>	<u>Part No.</u>	<u>Description</u>	<u>Remark</u>			<u>Ref.No</u>	<u>Part No.</u>	<u>Description</u>	<u>Remark</u>			
R105	1-216-180-00	METAL GLAZE	180	5%	1/8W	C20	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
R106	1-216-041-00	METAL GLAZE	470	5%	1/10W	C21	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
R107	1-216-045-00	METAL GLAZE	680	5%	1/10W	C22	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
R108	1-216-009-00	METAL GLAZE	22	5%	1/10W	C23	1-135-145-11	TANTAL CHIP	0.47MF	10%	25V	
R109	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	C24	1-135-085-21	TANTAL CHIP	4.7MF	10%	25V	
R110	1-216-206-00	METAL GLAZE	2.2K	5%	1/8W	C25	1-135-152-21	TANTAL CHIP	1.5MF	10%	25V	
R111	1-216-206-00	METAL GLAZE	2.2K	5%	1/8W	C26	1-135-085-21	TANTAL CHIP	4.7MF	10%	25V	
R112	1-216-025-00	METAL GLAZE	100	5%	1/10W	C27	1-126-103-11	ELECT	470MF	20%	16V	
R113	1-216-041-00	METAL GLAZE	470	5%	1/10W	C28	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V	
R114	1-216-081-00	METAL GLAZE	22K	5%	1/10W	C29	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V	
R115	1-216-081-00	METAL GLAZE	22K	5%	1/10W	C30	1-135-152-21	TANTAL CHIP	1.5MF	10%	25V	
R117	1-216-017-00	METAL GLAZE	47	5%	1/10W	C31	1-135-091-00	TANTAL CHIP	1MF	10%	16V	
R118	1-216-093-00	METAL GLAZE	68K	5%	1/10W	C33	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V	
R119	1-216-081-00	METAL GLAZE	22K	5%	1/10W	C34	1-163-077-00	CERAMIC CHIP	0.1MF	10%	25V	
R120	1-216-017-00	METAL GLAZE	47	5%	1/10W	C35	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
R121	1-216-017-00	METAL GLAZE	47	5%	1/10W	C36	1-135-085-21	TANTAL CHIP	4.7MF	10%	25V	
R124	1-216-073-00	METAL GLAZE	10K	5%	1/10W	C37	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
R125	1-216-073-00	METAL GLAZE	10K	5%	1/10W	C38	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V	
R126	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	C40	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
R127	1-216-029-00	METAL GLAZE	150	5%	1/10W	C41	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V	
R128	1-216-049-00	METAL GLAZE	1K	5%	1/10W	C42	1-135-085-21	TANTAL CHIP	4.7MF	10%	25V	
<u>VARIABLE RESISTOR</u>												
RV1	1-237-518-21	RES, ADJ, CERMET	10K	(H.BLK WIDTH)			C43	1-135-145-11	TANTAL CHIP	0.47MF	10%	25V
RV2	1-237-515-21	RES, ADJ, CERMET	1K	(H.SYNC. TIMING)			C44	1-123-605-00	ELECT	100MF	20%	100V
RV3	1-237-513-21	RES, ADJ, CERMET	200	(OUTPUT LEVEL)			C45	1-163-832-00	CERAMIC CHIP	0.1MF	10%	100V
RV4	1-237-517-21	RES, ADJ, CERMET	5K	(GRAY LEVEL)			C48	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
<u>SWITCH</u>												
SW1	1-571-428-11	SWITCH, SLIDE					C49	1-126-111-11	ELECT	3.3MF	20%	100V
<u>THERMISTOR</u>												
TH-1	1-800-279-21	THERMISTOR	5.0K				C51	1-135-085-21	TANTAL CHIP	4.7MF	10%	25V
<u>CRYSTAL</u>												
X1	1-577-212-11	VIBRATOR, CRYSTAL					C52	1-135-152-21	TANTAL CHIP	1.5MF	10%	25V
*****												
<u>A BOARD, COMPLETE</u>												
*****												
<u>AB, BOARD</u>												
*1-628-305-21		AB, BOARD					DB1	1-233-170-11	COMPOSITION CIRCUIT BLOCK			
*1-629-851-11		AA, BOARD					DB2	1-233-169-11	COMPOSITION CIRCUIT BLOCK			
4-391-550-01		SCREW (M5X15) (A), LOCK					<u>IC</u>					
4-826-537-11		WASHER, SPECIAL					IC1	8-759-141-05	IC	UPC4574G2		
<u>CAPACITOR</u>							IC2	8-759-100-97	IC	UPC339G2		
C1	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V		J1	*1-564-433-21	CONNECTOR, COAXIAL			
C2	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V		J2	*1-564-433-21	CONNECTOR, COAXIAL			
C3	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V		<u>CONNECTOR</u>					
C4	1-135-092-21	TANTAL CHIP	3.3MF	10%	16V		Q1	8-729-105-68	TRANSISTOR	2SC3356-K		
C5	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V		Q2	8-729-105-68	TRANSISTOR	2SC3356-K		
C6	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V		Q3	8-729-105-68	TRANSISTOR	2SC3356-K		
C7	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V		Q4	8-729-105-68	TRANSISTOR	2SC3356-K		
C8	1-163-087-00	CERAMIC CHIP	4PF	0.25PF	50V		Q5	8-729-105-68	TRANSISTOR	2SC3356-K		
C9	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V		Q6	8-729-105-68	TRANSISTOR	2SC3356-K		
C11	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V		Q7	8-729-105-59	TRANSISTOR	2SC3357-HFE		
C12	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V		Q8	8-729-105-68	TRANSISTOR	2SC3356-K		
C13	1-163-086-00	CERAMIC CHIP	3PF	0.25PF	50V		Q9	8-729-129-54	TRANSISTOR	2SC2954-T1		
C15	1-135-145-11	TANTAL CHIP	0.47MF	10%	25V		Q10	8-729-105-59	TRANSISTOR	2SC3357-HFE		
C16	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V							
C17	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V							
C18	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V							
C19	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V							

**DDM-2801C/2802C**  
**DDM-2801C2/2802C2**

**A**    **M**

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
Q11	8-729-103-72	TRANSISTOR	2SD1005	R51	1-216-073-00	METAL GLAZE	10K 5% 1/10W
Q12	8-729-100-66	TRANSISTOR	2SC1623	R52	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W
Q13	8-729-104-26	TRANSISTOR	2SB804-AW	R53	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W
Q14	8-729-100-66	TRANSISTOR	2SC1623	R54	1-216-071-00	METAL GLAZE	8.2K 5% 1/10W
Q15	8-729-116-05	TRANSISTOR	2SK160-K5	R55	1-216-069-00	METAL GLAZE	6.8K 5% 1/10W
Q16	8-729-116-05	TRANSISTOR	2SK160-K5	R56	1-216-059-00	METAL GLAZE	2.7K 5% 1/10W
Q17	8-729-100-66	TRANSISTOR	2SC1623	R57	1-216-059-00	METAL GLAZE	2.7K 5% 1/10W
Q18	8-729-116-05	TRANSISTOR	2SK160-K5	R58	1-216-001-00	METAL GLAZE	10 5% 1/10W
Q19	8-729-230-77	TRANSISTOR	2SC4200	R60	1-216-027-00	METAL GLAZE	120 5% 1/10W
4-391-502-01	INSULATOR : (Q19)			R61	1-216-055-00	METAL GLAZE	1.8K 5% 1/10W
7-682-951-01	SCREW +PSW 3X14 : (Q19)			R62	1-216-073-00	METAL GLAZE	10K 5% 1/10W
Q20	8-729-320-58	TRANSISTOR	2SK1197	R63	1-216-073-00	METAL GLAZE	10K 5% 1/10W
4-391-502-01	INSULATOR : (Q20)			R64	1-216-019-00	METAL GLAZE	56 5% 1/10W
7-682-951-01	SCREW +PSW 3X14 : (Q20)			R67	1-216-121-00	METAL GLAZE	1M 5% 1/10W
				R68	1-216-061-00	METAL GLAZE	3.3K 5% 1/10W
			<u>RESISTOR</u>				
R1	1-216-627-11	METAL CHIP	100 0.50% 1/10W	R69	1-247-735-11	CARBON	47 5% 1/2W F
R2	1-216-627-11	METAL CHIP	100 0.50% 1/10W	R70	1-216-053-00	METAL GLAZE	1.5K 5% 1/10W
R3	1-216-017-00	METAL GLAZE	47 5% 1/10W	R71	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R4	1-216-055-00	METAL GLAZE	1.8K 5% 1/10W	R72	1-216-055-00	METAL GLAZE	1.8K 5% 1/10W
R5	1-216-025-00	METAL GLAZE	100 5% 1/10W	R80	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R6	1-216-061-00	METAL GLAZE	3.3K 5% 1/10W	R81	1-216-007-00	METAL GLAZE	18 5% 1/10W
R7	1-216-033-00	METAL GLAZE	220 5% 1/10W	R82	1-216-007-00	METAL GLAZE	18 5% 1/10W
R8	1-216-009-00	METAL GLAZE	22 5% 1/10W	R83	1-216-007-00	METAL GLAZE	18 5% 1/10W
R9	1-216-025-00	METAL GLAZE	100 5% 1/10W	R84	1-216-007-00	METAL GLAZE	18 5% 1/10W
R10	1-216-021-00	METAL GLAZE	68 5% 1/10W	R85	1-216-007-00	METAL GLAZE	18 5% 1/10W
R11	1-216-045-00	METAL GLAZE	680 5% 1/10W	R86	1-216-007-00	METAL GLAZE	18 5% 1/10W
R12	1-216-047-00	METAL GLAZE	820 5% 1/10W	R87	1-216-007-00	METAL GLAZE	18 5% 1/10W
R13	1-216-045-00	METAL GLAZE	680 5% 1/10W	R88	1-216-007-00	METAL GLAZE	18 5% 1/10W
R14	1-216-033-00	METAL GLAZE	220 5% 1/10W	R89	1-216-007-00	METAL GLAZE	18 5% 1/10W
R15	1-216-017-00	METAL GLAZE	47 5% 1/10W	R90	1-216-007-00	METAL GLAZE	18 5% 1/10W
R16	1-216-037-00	METAL GLAZE	330 5% 1/10W				
R17	1-216-029-00	METAL GLAZE	150 5% 1/10W				
R18	1-216-190-00	METAL GLAZE	470 5% 1/8W				
R19	1-216-190-00	METAL GLAZE	470 5% 1/8W				
R20	1-216-017-00	METAL GLAZE	47 5% 1/10W				
R21	1-216-174-00	METAL GLAZE	100 5% 1/8W				
R22	1-216-025-00	METAL GLAZE	100 5% 1/10W				
R23	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W				
R24	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W				
R25	1-216-017-00	METAL GLAZE	47 5% 1/10W				
R26	1-216-049-00	METAL GLAZE	1K 5% 1/10W				
R27	1-216-059-00	METAL GLAZE	2.7K 5% 1/10W				
R28	1-216-053-00	METAL GLAZE	1.5K 5% 1/10W				
R29	1-216-170-00	METAL GLAZE	68 5% 1/8W				
R30	1-216-017-00	METAL GLAZE	47 5% 1/10W				
R31	1-216-017-00	METAL GLAZE	47 5% 1/10W				
R32	1-216-077-00	METAL GLAZE	15K 5% 1/10W				
R33	1-216-121-00	METAL GLAZE	1M 5% 1/10W				
R34	1-216-121-00	METAL GLAZE	1M 5% 1/10W				
R35	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W				
R36	1-216-025-00	METAL GLAZE	100 5% 1/10W				
R37	1-216-073-00	METAL GLAZE	10K 5% 1/10W				
R38	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W				
R39	1-216-033-00	METAL GLAZE	220 5% 1/10W				
R40	1-216-025-00	METAL GLAZE	100 5% 1/10W				
R41	1-216-089-00	METAL GLAZE	47K 5% 1/10W				
R42	1-216-073-00	METAL GLAZE	10K 5% 1/10W				
R43	1-216-049-00	METAL GLAZE	1K 5% 1/10W				
R44	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W				
R45	1-216-121-00	METAL GLAZE	1M 5% 1/10W				
R46	1-247-732-11	CARBON	27 5% 1/2W F				
R47	1-216-055-00	METAL GLAZE	1.8K 5% 1/10W				
R48	1-216-005-00	METAL GLAZE	15 5% 1/10W				
R49	1-216-063-00	METAL GLAZE	3.9K 5% 1/10W				
R50	1-216-071-00	METAL GLAZE	8.2K 5% 1/10W				
			<u>VARIABLE RESISTOR</u>				
RV1	1-230-867-11	RES, ADJ, GLAZE	1K (BIAS)				
RV2	1-230-869-11	RES, ADJ, GLAZE	4.7K (VGG)				
			*****				
			<u>M BOARD, COMPLETE</u>				
			*****				
			<u>CAPACITOR</u>				
C1	1-102-074-00	CERAMIC	0.001MF 10% 50V				
C2	1-102-074-00	CERAMIC	0.001MF 10% 50V				
C3	1-136-161-00	FILM	0.047MF 5% 50V				
C4	1-136-161-00	FILM	0.047MF 5% 50V				
			<u>PLUG</u>				
CNM-1	*1-564-516-11	PLUG CONNECTOR	13P				
CNM-2	*1-564-507-11	PLUG CONNECTOR	4P				
CNM-3	*1-564-512-11	PLUG CONNECTOR	9P				
CNM-4	*1-564-513-11	PLUG CONNECTOR	10P				
CNM-5	*1-564-514-11	PLUG CONNECTOR	11P				
CNM-6	*1-564-515-11	PLUG CONNECTOR	12P				
CNM-8	*1-564-507-11	PLUG CONNECTOR	4P				
CNM-9	*1-564-511-11	PLUG CONNECTOR	8P				
CNM-9	*1-564-515-11	PLUG CONNECTOR	12P				
CNM-10	*1-566-984-11	RECEPTACLE, MULTI	CONNECTOR 100P				
CNM-11	*1-566-985-11	RECEPTACLE, MULTI	CONNECTOR 100P				
			*****				

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark				
<b>M1 BOARD, COMPLETE</b>											
*****											
3-721-912-01	LEVER, BOARD			C58	1-101-880-00	CERAMIC	47PF 5% 50V				
4-378-915-01	NUT (M2.6), PLATE			C59	1-101-880-00	CERAMIC	47PF 5% 50V				
<b>CAPACITOR</b>											
C1	1-124-122-11	ELECT	100MF 20% 25V	C60	1-123-875-11	ELECT	10MF 20% 50V				
C2	1-124-122-11	ELECT	100MF 20% 25V	C61	1-136-171-00	FILM	0.33MF 5% 50V				
C3	1-124-122-11	ELECT	100MF 20% 25V	C62	1-136-161-00	FILM	0.047MF 5% 50V				
C4	1-124-122-11	ELECT	100MF 20% 25V	C63	1-136-165-00	FILM	0.1MF 5% 50V				
C5	1-124-122-11	ELECT	100MF 20% 25V	C64	1-102-074-00	CERAMIC	0.001MF 10% 50V				
C6	1-124-122-11	ELECT	100MF 20% 25V	C65	1-136-165-00	FILM	0.1MF 5% 50V				
C7	1-128-078-11	ELECT	33MF 20% 25V	C66	1-136-161-00	FILM	0.047MF 5% 50V				
C8	1-136-165-00	FILM	0.1MF 5% 50V	C67	1-136-171-00	FILM	0.33MF 5% 50V				
C9	1-124-126-00	ELECT	47MF 20% 25V	C68	1-136-165-00	FILM	0.1MF 5% 50V				
C10	1-101-880-00	CERAMIC	47PF 5% 50V	C69	1-123-875-11	ELECT	10MF 20% 50V				
C11	1-136-153-00	FILM	0.01MF 5% 50V	C70	1-136-165-00	FILM	0.1MF 5% 50V				
C12	1-101-880-00	CERAMIC	47PF 5% 50V	C71	1-124-126-00	ELECT	47MF 20% 25V				
C13	1-136-153-00	FILM	0.01MF 5% 50V	<b>CONNECTOR</b>							
DDM-2801C; Serial No. 2,000,006~2,000,038											
DDM-2802C; Serial No. 2,000,001~2,000,014											
DDM-2801C2; Serial No. 2,000,004~2,000,048											
DDM-2802C2; Serial No. 2,000,002~2,000,005											
C13	1-136-161-00	FILM	0.047MF 5% 50V	D1	8-719-911-19	DIODE	ISS119				
DDM-2801C; Serial No. 2,000,039 and higher				D2	8-719-911-19	DIODE	ISS119				
DDM-2802C; Serial No. 2,000,015 and higher				D3	8-719-911-19	DIODE	ISS119				
DDM-2801C2; Serial No. 2,000,049 and higher				D4	8-719-109-57	DIODE	RD2.4ESB2				
DDM-2802C2; Serial No. 2,000,006 and higher				D5	8-719-911-19	DIODE	ISS119				
C14	1-136-153-00	FILM	0.01MF 5% 50V	D6	8-719-911-19	DIODE	ISS119				
C16	1-101-004-00	CERAMIC	0.01MF 50V	D7	8-719-911-19	DIODE	ISS119				
C17	1-131-368-00	TANTAL	3.3MF 10% 16V	D8	8-719-911-19	DIODE	ISS119				
C18	1-131-368-00	TANTAL	3.3MF 10% 16V	D9	8-719-911-19	DIODE	ISS119				
C19	1-131-368-00	TANTAL	3.3MF 10% 16V	D10	8-719-109-81	DIODE	RD4.7ESB2				
C20	1-131-368-00	TANTAL	3.3MF 10% 16V	D11	8-719-109-81	DIODE	RD4.7ESB2				
C21	1-131-368-00	TANTAL	3.3MF 10% 16V	D12	8-719-109-81	DIODE	RD4.7ESB2				
C22	1-101-004-00	CERAMIC	0.01MF 50V	D13	8-719-109-57	DIODE	RD2.4ESB2				
C23	1-101-004-00	CERAMIC	0.01MF 50V	DDM-2801C; Serial No. 2,000,039 and higher							
C24	1-101-004-00	CERAMIC	0.01MF 50V	DDM-2802C; Serial No. 2,000,015 and higher							
C25	1-131-368-00	TANTAL	3.3MF 10% 16V	DDM-2801C2; Serial No. 2,000,049 and higher							
DDM-2802C2; Serial No. 2,000,006 and higher											
ND1	8-719-980-30	LED DIODE	GL-8D03D	<b>IC</b>							
C26	1-131-368-00	TANTAL	3.3MF 10% 16V	IC1	8-759-208-40	IC	TMPZ84C00AP-6				
C27	1-131-368-00	TANTAL	3.3MF 10% 16V		1-526-662-21	IC	SOCKET, IC (DP) 40P, (IC1)				
C28	1-101-004-00	CERAMIC	0.01MF 50V	IC2	8-759-939-22	IC	Z84C3006PSC				
C29	1-101-004-00	CERAMIC	0.01MF 50V	IC3	8-759-922-95	IC	MSM82C51ARS				
C30	1-101-004-00	CERAMIC	0.01MF 50V	IC4	8-759-746-86	IC	27C128-25				
C32	1-101-004-00	CERAMIC	0.01MF 50V		1-526-659-00	IC	SOCKET, IC (DP) 28P, (IC4)				
C34	1-101-004-00	CERAMIC	0.01MF 50V	IC5	8-752-331-22	IC	CXK5864BSP-10L				
C35	1-101-004-00	CERAMIC	0.01MF 50V	IC6	8-752-331-22	IC	CXK5864BSP-10L				
C36	1-101-004-00	CERAMIC	0.01MF 50V	IC7	8-759-748-05	IC	UPD28C64C-20				
C38	1-101-004-00	CERAMIC	0.01MF 50V		1-526-659-00	IC	SOCKET, IC (DP) 28P, (IC7)				
C39	1-123-875-11	ELECT	10MF 20% 50V	IC8	8-759-748-05	IC	UPD28C64C-20				
C40	1-123-875-11	ELECT	10MF 20% 50V		1-526-659-00	IC	SOCKET, IC (DP) 28P, (IC8)				
C41	1-102-973-00	CERAMIC	100PF 5% 50V	IC9	8-759-917-43	IC	SN74HC138N				
C42	1-101-004-00	CERAMIC	0.01MF 50V	IC10	8-759-916-49	IC	SN74HC154NT				
C44	1-101-004-00	CERAMIC	0.01MF 50V		IC11	8-759-916-79	IC	SN74HC273N			
C45	1-101-004-00	CERAMIC	0.01MF 50V	IC12	8-759-916-29	IC	SN74HC74N				
C48	1-136-161-00	FILM	0.047MF 5% 50V	IC13	8-759-916-71	IC	SN74HC244N				
C49	1-102-824-00	CERAMIC	470PF 5% 50V	IC14	8-759-916-71	IC	SN74HC244N				
C50	1-136-161-00	FILM	0.047MF 5% 50V	IC15	8-759-921-34	IC	SN74HC245N				
C51	1-124-126-00	ELECT	47MF 20% 25V		IC16	8-759-203-34	IC	TC74HC368P			
C52	1-124-767-00	ELECT	2.2MF 20% 50V	IC17	8-759-916-92	IC	SN74HC367N				
C53	1-124-126-00	ELECT	47MF 20% 25V	IC18	8-759-916-92	IC	SN74HC367N				
C54	1-136-165-00	FILM	0.1MF 5% 50V	IC19	8-759-803-70	IC	LC74HC08				
C55	1-124-126-00	ELECT	47MF 20% 25V	IC20	8-759-916-25	IC	SN74HC32N				
C56	1-101-880-00	CERAMIC	47PF 5% 50V		IC21	8-759-916-25	IC	SN74HC32N			
C57	1-101-880-00	CERAMIC	47PF 5% 50V	IC22	8-759-916-12	IC	SN74HC00N				
				IC23	8-759-916-20	IC	SN74HC14N				

**DDM-2801C/2802C  
DDM-2801C2/2802C2**

**M1**

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
IC24	8-759-916-20	IC SN74HC14N		R36	1-249-429-11	CARBON	10K 5% 1/4W
IC25	8-759-908-35	IC TL7705CP-B		R37	1-249-429-11	CARBON	10K 5% 1/4W
IC26	8-759-008-57	IC MC34051P		R38	1-249-429-11	CARBON	10K 5% 1/4W
IC27	8-759-916-50	IC SN74HC157N		R39	1-249-429-11	CARBON	10K 5% 1/4W
IC28	8-759-007-18	IC MC74HC4046N		R40	1-249-429-11	CARBON	10K 5% 1/4W
IC29	8-759-977-79	IC CXD8002S		R41	1-249-429-11	CARBON	10K 5% 1/4W
IC30	8-759-916-55	IC SN74HC175N		R42	1-215-445-00	METAL	10K 1% 1/6W
IC31	8-759-796-84	IC PAL16L8ACN-M1003		R43	1-215-445-00	METAL	10K 1% 1/6W
IC32	8-759-977-76	IC MB4056P		R44	1-215-445-00	METAL	10K 1% 1/6W
IC33	8-759-203-78	IC TC74HC4511P		R45	1-215-445-00	METAL	10K 1% 1/6W
IC34	8-759-977-78	IC MB88342P		R46	1-249-431-11	CARBON	15K 5% 1/4W
IC35	8-759-700-81	IC NJM555D		R47	1-249-414-11	CARBON	560 5% 1/4W
IC36	8-759-787-66	IC MB7124H-M1		R48	1-215-441-00	METAL	6.8K 1% 1/6W
IC37	8-759-946-12	IC AD7528JN					DDM-2801C; Serial No. 2,000,039 and higher
IC38	8-759-113-18	IC UPC4574C					DDM-2802C; Serial No. 2,000,015 and higher
IC39	8-759-982-44	IC RC79L05A					DDM-2801C2; Serial No. 2,000,049 and higher
IC40	8-759-113-18	IC UPC4574C					DDM-2802C2; Serial No. 2,000,006 and higher
IC41	8-759-982-26	IC RC78L12A					DDM-2801C; Serial No. 2,000,006~2,000,038
IC42	8-759-982-48	IC RC79L12A					DDM-2802C; Serial No. 2,000,001~2,000,014
IC43	8-759-113-18	IC UPC4574C					DDM-2801C2; Serial No. 2,000,004~2,000,048
							DDM-2802C2; Serial No. 2,000,002~2,000,005
				R49	1-249-433-11	CARBON	22K 5% 1/4W
L1	1-421-421-00	COIL, CHOKE	100UH	R50	1-249-429-11	CARBON	10K 5% 1/4W
				R51	1-249-429-11	CARBON	10K 5% 1/4W
				R52	1-249-429-11	CARBON	10K 5% 1/4W
				R54	1-249-429-11	CARBON	10K 5% 1/4W
Q1	8-729-119-78	TRANSISTOR	2SC2785-HFE	R55	1-249-429-11	CARBON	10K 5% 1/4W
Q2	8-729-115-30	TRANSISTOR	2SK105A-30	R56	1-249-405-11	CARBON	100 5% 1/4W
Q3	8-729-119-78	TRANSISTOR	2SC2785-HFE	R57	1-249-429-11	CARBON	10K 5% 1/4W
Q4	8-729-119-78	TRANSISTOR	2SC2785-HFE	R58	1-249-429-11	CARBON	10K 5% 1/4W
Q5	8-729-119-76	TRANSISTOR	2SA1175-HFE	R59	1-249-433-11	CARBON	22K 5% 1/4W
				R60	1-249-421-11	CARBON	2.2K 5% 1/4W
				R61	1-215-493-00	METAL	1M 1% 1/6W
R1	1-249-429-11	CARBON	10K 5% 1/4W	R62	1-249-429-11	CARBON	10K 5% 1/4W
R2	1-249-429-11	CARBON	10K 5% 1/4W	R63	1-249-429-11	CARBON	10K 5% 1/4W
R3	1-249-429-11	CARBON	10K 5% 1/4W	R64	1-249-429-11	CARBON	10K 5% 1/4W
R4	1-249-425-11	CARBON	4.7K 5% 1/4W	R65	1-249-417-11	CARBON	1K 5% 1/4W
R5	1-249-425-11	CARBON	4.7K 5% 1/4W	R66	1-249-429-11	CARBON	10K 5% 1/4W
R6	1-249-425-11	CARBON	4.7K 5% 1/4W	R67	1-247-895-00	CARBON	470K 5% 1/4W
R7	1-249-429-11	CARBON	10K 5% 1/4W	R68	1-249-425-11	CARBON	4.7K 5% 1/4W
R8	1-249-417-11	CARBON	1K 5% 1/4W	R69	1-249-405-11	CARBON	100 5% 1/4W
R9	1-249-417-11	CARBON	1K 5% 1/4W	R70	1-249-441-11	CARBON	100K 5% 1/4W
R10	1-249-417-11	CARBON	1K 5% 1/4W	R71	1-215-445-00	METAL	10K 1% 1/6W
R11	1-249-417-11	CARBON	1K 5% 1/4W	R72	1-215-445-00	METAL	10K 1% 1/6W
R12	1-249-417-11	CARBON	1K 5% 1/4W	R73	1-249-441-11	CARBON	100K 5% 1/4W
R13	1-249-417-11	CARBON	1K 5% 1/4W	R74	1-249-437-11	CARBON	47K 5% 1/4W
R14	1-249-417-11	CARBON	1K 5% 1/4W	R76	1-249-435-11	CARBON	33K 5% 1/4W
R15	1-249-417-11	CARBON	1K 5% 1/4W	R77	1-247-883-00	CARBON	150K 5% 1/4W
R16	1-249-429-11	CARBON	10K 5% 1/4W	R78	1-247-883-00	CARBON	150K 5% 1/4W
R17	1-249-413-11	CARBON	470 5% 1/4W	R79	1-215-445-00	METAL	10K 1% 1/6W
R18	1-249-429-11	CARBON	10K 5% 1/4W	R80	1-247-895-00	CARBON	470K 5% 1/4W
R19	1-249-429-11	CARBON	10K 5% 1/4W	R81	1-215-441-00	METAL	6.8K 1% 1/6W
R20	1-249-429-11	CARBON	10K 5% 1/4W	R82	1-215-459-00	METAL	39K 1% 1/6W
R21	1-249-419-11	CARBON	1.5K 5% 1/4W	R83	1-249-429-11	CARBON	10K 5% 1/4W
R22	1-249-425-11	CARBON	4.7K 5% 1/4W	R84	1-215-493-00	METAL	1M 1% 1/6W
R23	1-249-413-11	CARBON	470 5% 1/4W	R85	1-215-445-00	METAL	10K 1% 1/6W
R24	1-249-413-11	CARBON	470 5% 1/4W	R86	1-249-417-11	CARBON	1K 5% 1/4W
R25	1-249-429-11	CARBON	10K 5% 1/4W	R87	1-249-417-11	CARBON	1K 5% 1/4W
R27	1-249-429-11	CARBON	10K 5% 1/4W	R88	1-247-883-00	CARBON	150K 5% 1/4W
R28	1-249-405-11	CARBON	100 5% 1/4W	R89	1-247-883-00	CARBON	150K 5% 1/4W
R29	1-249-405-11	CARBON	100 5% 1/4W	R90	1-249-435-11	CARBON	33K 5% 1/4W
R30	1-249-429-11	CARBON	10K 5% 1/4W	R91	1-249-417-11	CARBON	1K 5% 1/4W
R31	1-249-405-11	CARBON	100 5% 1/4W	R93	1-249-429-11	CARBON	10K 5% 1/4W
R32	1-249-417-11	CARBON	1K 5% 1/4W	R94	1-249-429-11	CARBON	10K 5% 1/4W
R33	1-249-417-11	CARBON	1K 5% 1/4W	R95	1-249-405-11	CARBON	100 5% 1/4W
R34	1-249-405-11	CARBON	100 5% 1/4W	R96	1-249-405-11	CARBON	100 5% 1/4W
R35	1-249-429-11	CARBON	10K 5% 1/4W				

**DDM-2801C/2802C  
DDM-2801C2/2802C2**

M1

M2

**DDM-2801C/2802C**  
**DDM-2801C2/2802C2**

**M2**

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
IC6	8-759-203-33	IC TC74HC367P		R32	1-215-433-00	METAL	3.3K 1% 1/6W
IC7	8-759-202-56	IC TC74HC245P		R33	1-215-433-00	METAL	3.3K 1% 1/6W
IC8	8-759-113-18	IC UPC4574C		R34	1-249-409-11	CARBON	220 5% 1/4W
IC9	8-741-157-20	IC SBX1572-01		R35	1-215-433-00	METAL	3.3K 1% 1/6W
IC10	8-741-157-20	IC SBX1572-01		R36	1-215-433-00	METAL	3.3K 1% 1/6W
IC11	8-741-157-20	IC SBX1572-01		R37	1-249-409-11	CARBON	220 5% 1/4W
IC12	8-741-157-20	IC SBX1572-01		R38	1-215-433-00	METAL	3.3K 1% 1/6W
IC13	8-741-157-20	IC SBX1572-01		R39	1-215-433-00	METAL	3.3K 1% 1/6W
IC14	8-741-157-20	IC SBX1572-01		R40	1-249-409-11	CARBON	220 5% 1/4W
IC15	8-741-157-20	IC SBX1572-01		R41	1-215-433-00	METAL	3.3K 1% 1/6W
IC17	8-759-109-82	IC UPC814C		R42	1-215-433-00	METAL	3.3K 1% 1/6W
IC18	8-759-109-82	IC UPC814C		R43	1-249-409-11	CARBON	220 5% 1/4W
IC19	8-759-109-82	IC UPC814C		R44	1-215-433-00	METAL	3.3K 1% 1/6W
IC20	8-759-109-82	IC UPC814C		R45	1-249-409-11	CARBON	220 5% 1/4W
IC21	8-759-007-21	IC MC74HC4053N		R47	1-249-409-11	CARBON	220 5% 1/4W
IC22	8-759-140-53	IC MC14053BCP		R48	1-249-409-11	CARBON	220 5% 1/4W
IC23	8-759-040-53	IC MC14053BCP		R49	1-249-405-11	CARBON	100 5% 1/4W
IC24	8-759-113-18	IC UPC4574C		R50	1-249-417-11	CARBON	1K 5% 1/4W
IC25	8-759-113-18	IC UPC4574C		R52	1-249-417-11	CARBON	1K 5% 1/4W
IC26	8-759-113-18	IC UPC4574C		R53	1-249-417-11	CARBON	1K 5% 1/4W
IC27	8-759-103-92	IC UPC318C		R54	1-249-417-11	CARBON	1K 5% 1/4W
IC28	8-759-103-92	IC UPC318C		R55	1-249-433-11	CARBON	22K 5% 1/4W
<u>COIL</u>							
L1	1-421-421-00	COIL, CHOKE		R56	1-249-433-11	CARBON	22K 5% 1/4W
L2	1-408-414-00	INDUCTOR	27UH	R57	1-249-433-11	CARBON	22K 5% 1/4W
L3	1-408-414-00	INDUCTOR	27UH	R58	1-249-433-11	CARBON	22K 5% 1/4W
L4	1-408-414-00	INDUCTOR	27UH	R59	1-249-433-11	CARBON	22K 5% 1/4W
L5	1-408-414-00	INDUCTOR	27UH	R60	1-249-433-11	CARBON	22K 5% 1/4W
L6	1-408-414-00	INDUCTOR	27UH	R61	1-249-433-11	CARBON	22K 5% 1/4W
L7	1-408-414-00	INDUCTOR	27UH	R62	1-249-433-11	CARBON	22K 5% 1/4W
L8	1-408-414-00	INDUCTOR	27UH	R63	1-249-433-11	CARBON	22K 5% 1/4W
<u>TRANSISTOR</u>							
Q1	8-729-266-82	TRANSISTOR	2SC2668	R64	1-249-433-11	CARBON	22K 5% 1/4W
Q2	8-729-119-78	TRANSISTOR	2SC2785-HFE	R65	1-249-433-11	CARBON	22K 5% 1/4W
Q3	8-729-119-78	TRANSISTOR	2SC2785-HFE	R66	1-249-433-11	CARBON	22K 5% 1/4W
<u>RESISTOR</u>							
R1	1-249-429-11	CARBON	10K 5% 1/4W	R67	1-249-433-11	CARBON	22K 5% 1/4W
R2	1-249-429-11	CARBON	10K 5% 1/4W	R68	1-249-433-11	CARBON	22K 5% 1/4W
R3	1-249-429-11	CARBON	10K 5% 1/4W	R69	1-249-433-11	CARBON	22K 5% 1/4W
R4	1-249-429-11	CARBON	10K 5% 1/4W	R70	1-249-433-11	CARBON	22K 5% 1/4W
R6	1-249-429-11	CARBON	10K 5% 1/4W	R71	1-215-453-00	METAL	22K 1% 1/6W
R7	1-249-429-11	CARBON	10K 5% 1/4W	R72	1-215-453-00	METAL	22K 1% 1/6W
R8	1-249-413-11	CARBON	470 5% 1/4W	R73	1-215-453-00	METAL	22K 1% 1/6W
R10	1-215-433-00	METAL	3.3K 1% 1/6W	R74	1-215-459-00	METAL	39K 1% 1/6W
R11	1-215-433-00	METAL	3.3K 1% 1/6W	R75	1-215-461-00	METAL	47K 1% 1/6W
R12	1-215-433-00	METAL	3.3K 1% 1/6W	R76	1-215-449-00	METAL	15K 1% 1/6W
R13	1-215-433-00	METAL	3.3K 1% 1/6W	R77	1-215-453-00	METAL	22K 1% 1/6W
R14	1-215-433-00	METAL	3.3K 1% 1/6W	R78	1-215-453-00	METAL	22K 1% 1/6W
R15	1-215-433-00	METAL	3.3K 1% 1/6W	R79	1-215-449-00	METAL	15K 1% 1/6W
R16	1-215-433-00	METAL	3.3K 1% 1/6W	R80	1-249-433-11	CARBON	22K 5% 1/4W
R17	1-215-433-00	METAL	3.3K 1% 1/6W	R81	1-249-433-11	CARBON	22K 5% 1/4W
R18	1-215-433-00	METAL	3.3K 1% 1/6W	R82	1-215-447-00	METAL	12K 1% 1/6W
R19	1-215-433-00	METAL	3.3K 1% 1/6W	R83	1-215-461-00	METAL	47K 1% 1/6W
R20	1-215-433-00	METAL	3.3K 1% 1/6W	R84	1-215-461-00	METAL	47K 1% 1/6W
R21	1-215-433-00	METAL	3.3K 1% 1/6W	R85	1-215-453-00	METAL	22K 1% 1/6W
R22	1-215-433-00	METAL	3.3K 1% 1/6W	R86	1-215-453-00	METAL	22K 1% 1/6W
R23	1-215-433-00	METAL	3.3K 1% 1/6W	R87	1-215-469-00	METAL	100K 1% 1/6W
R26	1-215-433-00	METAL	3.3K 1% 1/6W	R88	1-215-447-00	METAL	12K 1% 1/6W
R27	1-215-433-00	METAL	3.3K 1% 1/6W	R89	1-215-453-00	METAL	22K 1% 1/6W
R28	1-249-409-11	CARBON	220 5% 1/4W	R90	1-215-441-00	METAL	6.8K 1% 1/6W
R30	1-215-433-00	METAL	3.3K 1% 1/6W	R91	1-215-449-00	METAL	15K 1% 1/6W
R31	1-249-409-11	CARBON	220 5% 1/4W	R92	1-215-449-00	METAL	15K 1% 1/6W
				R93	1-215-453-00	METAL	22K 1% 1/6W
				R94	1-215-461-00	METAL	47K 1% 1/6W
				R95	1-249-417-11	CARBON	1K 5% 1/4W
				R96	1-215-453-00	METAL	22K 1% 1/6W
				R97	1-215-453-00	METAL	22K 1% 1/6W
				R98	1-215-437-00	METAL	4.7K 1% 1/6W

**M2**

**M2A**

**M2B**

Ref.No	Part No.	Description	Remark
R99	1-215-461-00	METAL	47K 1% 1/6W
R100	1-215-453-00	METAL	22K 1% 1/6W
R101	1-215-453-00	METAL	22K 1% 1/6W
R102	1-215-453-00	METAL	22K 1% 1/6W
R103	1-215-457-00	METAL	33K 1% 1/6W
R104	1-215-453-00	METAL	22K 1% 1/6W
R105	1-215-453-00	METAL	22K 1% 1/6W
R106	1-215-457-00	METAL	33K 1% 1/6W
R107	1-215-433-00	METAL	3.3K 1% 1/6W
R110	1-249-433-11	CARBON	22K 5% 1/4W
R111	1-249-433-11	CARBON	22K 5% 1/4W
R112	1-215-461-00	METAL	47K 1% 1/6W
R115	1-249-401-11	CARBON	47 5% 1/4W

\*\*\*\*\*

\* A-1301-815-A M2A BOARD, COMPLETE

\*\*\*\*\*

\* 1-566-095-11 PIN, BOARD TO BOARD 5P

CAPACITOR						
C1	1-163-077-00	CERAMIC CHIP	0.1MF	10%	25V	
C2	1-135-159-21	TANTAL CHIP	10MF	10%	16V	
C3	1-136-165-00	FILM	0.1MF	5%	50V	
C4	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V	
C5	1-135-159-21	TANTAL CHIP	10MF	10%	16V	
C6	1-135-164-21	TANTAL CHIP	22MF	10%	16V	
C7	1-135-164-21	TANTAL CHIP	22MF	10%	16V	
C8	1-163-038-00	CERAMIC CHIP	0.1MF		25V	

#### DIODE

D1	8-719-105-74	DIODE	RD4.7M-B3
D2	8-719-100-03	DIODE	1S2835
D4	8-719-105-74	DIODE	RD4.7M-B3
D5	8-719-105-38	DIODE	RD3.0M-B1

#### IC

IC1	8-759-100-96	IC	UPC4558G2
IC2	8-759-100-96	IC	UPC4558G2
IC3	8-759-100-96	IC	UPC4558G2

#### TRANSISTOR

Q1	8-729-100-66	TRANSISTOR	2SC1623
Q2	8-729-100-66	TRANSISTOR	2SC1623
Q3	8-729-100-66	TRANSISTOR	2SC1623
Q4	8-729-100-66	TRANSISTOR	2SC1623
Q5	8-729-100-66	TRANSISTOR	2SC1623
Q6	8-729-100-66	TRANSISTOR	2SC1623
Q7	8-729-216-22	TRANSISTOR	2SA1162

#### RESISTOR

JW1	1-216-295-00	METAL GLAZE	0	5%	1/10W
JW2	1-216-295-00	METAL GLAZE	0	5%	1/10W
JW3	1-216-295-00	METAL GLAZE	0	5%	1/10W
JW4	1-216-295-00	METAL GLAZE	0	5%	1/10W
JW5	1-216-295-00	METAL GLAZE	0	5%	1/10W
R1	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W
R2	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R3	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R4	1-216-683-11	METAL CHIP	22K	0.50%	1/10W
R5	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R6	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R7	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R8	1-216-681-11	METAL CHIP	18K	0.50%	1/10W
R9	1-216-081-00	METAL GLAZE	22K	5%	1/10W

Ref.No	Part No.	Description	Remark
R10	1-216-675-11	METAL CHIP	10K 0.50% 1/10W
R11	1-216-085-00	METAL GLAZE	33K 5% 1/10W
R12	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R13	1-216-685-11	METAL CHIP	27K 0.50% 1/10W
R14	1-216-675-11	METAL CHIP	10K 0.50% 1/10W
R15	1-216-081-00	METAL GLAZE	22K 5% 1/10W
R16	1-216-085-00	METAL GLAZE	33K 5% 1/10W
R17	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R18	1-216-053-00	METAL GLAZE	1.5K 5% 1/10W
R19	1-216-097-00	METAL GLAZE	100K 5% 1/10W
R20	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R21	1-216-053-00	METAL GLAZE	1.5K 5% 1/10W
R22	1-216-115-00	METAL GLAZE	560K 5% 1/10W
R23	1-216-053-00	METAL GLAZE	1.5K 5% 1/10W
R24	1-216-081-00	METAL GLAZE	22K 5% 1/10W
R25	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W
R26	1-216-053-00	METAL GLAZE	1.5K 5% 1/10W
R27	1-216-085-00	METAL GLAZE	33K 5% 1/10W

\*\*\*\*\*

\* A-1301-816-A M2B BOARD, COMPLETE

#### CAPACITOR

C1	1-163-038-00	CERAMIC CHIP	0.1MF	25V
C2	1-163-038-00	CERAMIC CHIP	0.1MF	25V
C3	1-163-038-00	CERAMIC CHIP	0.1MF	25V
C4	1-163-038-00	CERAMIC CHIP	0.1MF	25V
C5	1-163-009-11	CERAMIC CHIP	0.001MF	10% 50V
C6	1-163-009-11	CERAMIC CHIP	0.001MF	10% 50V
C7	1-163-009-11	CERAMIC CHIP	0.001MF	10% 50V
C8	1-163-009-11	CERAMIC CHIP	0.001MF	10% 50V
C9	1-163-009-11	CERAMIC CHIP	0.001MF	10% 50V
C10	1-163-009-11	CERAMIC CHIP	0.001MF	10% 50V
C11	1-163-009-11	CERAMIC CHIP	0.001MF	10% 50V
C12	1-163-009-11	CERAMIC CHIP	0.001MF	10% 50V
C13	1-163-009-11	CERAMIC CHIP	0.001MF	10% 50V
C14	1-163-009-11	CERAMIC CHIP	0.001MF	10% 50V
C15	1-163-009-11	CERAMIC CHIP	0.001MF	10% 50V
C16	1-163-009-11	CERAMIC CHIP	0.001MF	10% 50V
C17	1-163-009-11	CERAMIC CHIP	0.001MF	10% 50V
C18	1-163-009-11	CERAMIC CHIP	0.001MF	10% 50V
C19	1-163-009-11	CERAMIC CHIP	0.001MF	10% 50V
C20	1-163-009-11	CERAMIC CHIP	0.001MF	10% 50V
C21	1-163-009-11	CERAMIC CHIP	0.001MF	10% 50V
C22	1-163-009-11	CERAMIC CHIP	0.001MF	10% 50V
C23	1-163-009-11	CERAMIC CHIP	0.001MF	10% 50V
C24	1-163-009-11	CERAMIC CHIP	0.001MF	10% 50V
C25	1-163-009-11	CERAMIC CHIP	0.001MF	10% 50V
C26	1-163-009-11	CERAMIC CHIP	0.001MF	10% 50V
C27	1-163-009-11	CERAMIC CHIP	0.001MF	10% 50V
C28	1-163-009-11	CERAMIC CHIP	0.001MF	10% 50V
C29	1-163-009-11	CERAMIC CHIP	0.001MF	10% 50V
C30	1-163-009-11	CERAMIC CHIP	0.001MF	10% 50V
C31	1-163-009-11	CERAMIC CHIP	0.001MF	10% 50V
C32	1-163-009-11	CERAMIC CHIP	0.001MF	10% 50V
C33	1-163-009-11	CERAMIC CHIP	0.001MF	10% 50V
C34	1-163-009-11	CERAMIC CHIP	0.001MF	10% 50V
C35	1-163-009-11	CERAMIC CHIP	0.001MF	10% 50V
C36	1-163-009-11	CERAMIC CHIP	0.001MF	10% 50V
C37	1-163-038-00	CERAMIC CHIP	0.1MF	25V
C38	1-163-038-00	CERAMIC CHIP	0.1MF	25V
C39	1-163-038-00	CERAMIC CHIP	0.1MF	25V
C40	1-163-038-00	CERAMIC CHIP	0.1MF	25V

**DDM-2801C/2802C**  
**DDM-2801C2/2802C2**

**M2B M2C**

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark				
<u>IC</u>											
IC1	8-759-977-80	IC MB88342FP		C25	1-163-009-11	CERAMIC CHIP	0.001MF 10% 50V				
IC2	8-759-977-80	IC MB88342FP		C26	1-163-009-11	CERAMIC CHIP	0.001MF 10% 50V				
IC3	8-759-141-05	IC UPC4574G2		C27	1-163-009-11	CERAMIC CHIP	0.001MF 10% 50V				
IC4	8-759-141-05	IC UPC4574G2		C28	1-163-009-11	CERAMIC CHIP	0.001MF 10% 50V				
IC5	8-759-141-05	IC UPC4574G2		C29	1-163-009-11	CERAMIC CHIP	0.001MF 10% 50V				
IC6	8-759-141-05	IC UPC4574G2		C30	1-163-009-11	CERAMIC CHIP	0.001MF 10% 50V				
<u>RESISTOR</u>											
R1	1-216-691-11	METAL CHIP	47K 0.50% 1/10W	C31	1-163-009-11	CERAMIC CHIP	0.001MF 10% 50V				
R2	1-216-691-11	METAL CHIP	47K 0.50% 1/10W	C32	1-163-009-11	CERAMIC CHIP	0.001MF 10% 50V				
R3	1-216-691-11	METAL CHIP	47K 0.50% 1/10W	C33	1-163-009-11	CERAMIC CHIP	0.001MF 10% 50V				
R4	1-216-691-11	METAL CHIP	47K 0.50% 1/10W	C34	1-163-009-11	CERAMIC CHIP	0.001MF 10% 50V				
R5	1-216-691-11	METAL CHIP	47K 0.50% 1/10W	C35	1-163-009-11	CERAMIC CHIP	0.001MF 10% 50V				
R6	1-216-691-11	METAL CHIP	47K 0.50% 1/10W	C36	1-163-009-11	CERAMIC CHIP	0.001MF 10% 50V				
R7	1-216-691-11	METAL CHIP	47K 0.50% 1/10W	C37	1-163-038-00	CERAMIC CHIP	0.1MF 25V				
R8	1-216-691-11	METAL CHIP	47K 0.50% 1/10W	C38	1-163-038-00	CERAMIC CHIP	0.1MF 25V				
R9	1-216-691-11	METAL CHIP	47K 0.50% 1/10W	C40	1-163-038-00	CERAMIC CHIP	0.1MF 25V				
R10	1-216-691-11	METAL CHIP	47K 0.50% 1/10W	<u>IC</u>							
R11	1-216-691-11	METAL CHIP	47K 0.50% 1/10W	IC1	8-759-977-80	IC MB88342FP					
R12	1-216-691-11	METAL CHIP	47K 0.50% 1/10W	IC2	8-759-977-80	IC MB88342FP					
R13	1-216-691-11	METAL CHIP	47K 0.50% 1/10W	IC3	8-759-141-05	IC UPC4574G2					
R14	1-216-691-11	METAL CHIP	47K 0.50% 1/10W	IC4	8-759-141-05	IC UPC4574G2					
R15	1-216-691-11	METAL CHIP	47K 0.50% 1/10W	IC5	8-759-141-05	IC UPC4574G2					
R16	1-216-691-11	METAL CHIP	47K 0.50% 1/10W	IC6	8-759-141-05	IC UPC4574G2					
R17	1-216-691-11	METAL CHIP	47K 0.50% 1/10W	<u>RESISTOR</u>							
R18	1-216-691-11	METAL CHIP	47K 0.50% 1/10W	R1	1-216-691-11	METAL CHIP	47K 0.50% 1/10W				
R19	1-216-691-11	METAL CHIP	47K 0.50% 1/10W	R2	1-216-691-11	METAL CHIP	47K 0.50% 1/10W				
R20	1-216-691-11	METAL CHIP	47K 0.50% 1/10W	R3	1-216-691-11	METAL CHIP	47K 0.50% 1/10W				
R21	1-216-691-11	METAL CHIP	47K 0.50% 1/10W	R4	1-216-691-11	METAL CHIP	47K 0.50% 1/10W				
R22	1-216-691-11	METAL CHIP	47K 0.50% 1/10W	R5	1-216-691-11	METAL CHIP	47K 0.50% 1/10W				
R23	1-216-691-11	METAL CHIP	47K 0.50% 1/10W	R6	1-216-691-11	METAL CHIP	47K 0.50% 1/10W				
R24	1-216-691-11	METAL CHIP	47K 0.50% 1/10W	R7	1-216-691-11	METAL CHIP	47K 0.50% 1/10W				
R25	1-216-691-11	METAL CHIP	47K 0.50% 1/10W	R8	1-216-691-11	METAL CHIP	47K 0.50% 1/10W				
R26	1-216-691-11	METAL CHIP	47K 0.50% 1/10W	R9	1-216-691-11	METAL CHIP	47K 0.50% 1/10W				
R27	1-216-691-11	METAL CHIP	47K 0.50% 1/10W	R10	1-216-691-11	METAL CHIP	47K 0.50% 1/10W				
R28	1-216-691-11	METAL CHIP	47K 0.50% 1/10W	R11	1-216-691-11	METAL CHIP	47K 0.50% 1/10W				
R29	1-216-691-11	METAL CHIP	47K 0.50% 1/10W	R12	1-216-691-11	METAL CHIP	47K 0.50% 1/10W				
R30	1-216-691-11	METAL CHIP	47K 0.50% 1/10W	R13	1-216-691-11	METAL CHIP	47K 0.50% 1/10W				
R31	1-216-691-11	METAL CHIP	47K 0.50% 1/10W	R14	1-216-691-11	METAL CHIP	47K 0.50% 1/10W				
R32	1-216-691-11	METAL CHIP	47K 0.50% 1/10W	R15	1-216-691-11	METAL CHIP	47K 0.50% 1/10W				
*****											
* A-1301-826-A M2C BOARD, COMPLETE											
*****											
<u>CAPACITOR</u>											
C1	1-163-038-00	CERAMIC CHIP	0.1MF 25V	R21	1-216-691-11	METAL CHIP	47K 0.50% 1/10W				
C2	1-163-038-00	CERAMIC CHIP	0.1MF 25V	R22	1-216-691-11	METAL CHIP	47K 0.50% 1/10W				
C3	1-163-038-00	CERAMIC CHIP	0.1MF 25V	R23	1-216-691-11	METAL CHIP	47K 0.50% 1/10W				
C4	1-163-038-00	CERAMIC CHIP	0.1MF 25V	R24	1-216-691-11	METAL CHIP	47K 0.50% 1/10W				
C13	1-163-009-11	CERAMIC CHIP	0.001MF 10% 50V	R25	1-216-691-11	METAL CHIP	47K 0.50% 1/10W				
C14	1-163-009-11	CERAMIC CHIP	0.001MF 10% 50V	R26	1-216-691-11	METAL CHIP	47K 0.50% 1/10W				
C15	1-163-009-11	CERAMIC CHIP	0.001MF 10% 50V	R27	1-216-691-11	METAL CHIP	47K 0.50% 1/10W				
C16	1-163-009-11	CERAMIC CHIP	0.001MF 10% 50V	R28	1-216-691-11	METAL CHIP	47K 0.50% 1/10W				
C17	1-163-009-11	CERAMIC CHIP	0.001MF 10% 50V	R29	1-216-691-11	METAL CHIP	47K 0.50% 1/10W				
C18	1-163-009-11	CERAMIC CHIP	0.001MF 10% 50V	R30	1-216-691-11	METAL CHIP	47K 0.50% 1/10W				
C19	1-163-009-11	CERAMIC CHIP	0.001MF 10% 50V	R31	1-216-691-11	METAL CHIP	47K 0.50% 1/10W				
C20	1-163-009-11	CERAMIC CHIP	0.001MF 10% 50V	R32	1-216-691-11	METAL CHIP	47K 0.50% 1/10W				
C21	1-163-009-11	CERAMIC CHIP	0.001MF 10% 50V	*****							
C22	1-163-009-11	CERAMIC CHIP	0.001MF 10% 50V								
C23	1-163-009-11	CERAMIC CHIP	0.001MF 10% 50V								
C24	1-163-009-11	CERAMIC CHIP	0.001MF 10% 50V								

**DDM-2801C/2802C  
DDM-2801C2/2802C2**

**C      E**

<u>Ref.No</u>	<u>Part No.</u>	<u>Description</u>	<u>Remark</u>			<u>Ref.No</u>	<u>Part No.</u>	<u>Description</u>	<u>Remark</u>								
<b>C BOARD, COMPLETE</b>																	
*****																	
<b>* 1-565-822-11 SOCKET, PIN 1P</b>																	
1-590-260-11 LEAD ASSY, SIELD HIGH VOLTAVGE (G4)																	
1-590-261-11 LEAD ASSY, SIELD HIGH VOLTAVGE																	
<b>CAPACITOR</b>																	
C1	1-164-114-00	CERAMIC	0.0047MF	2KV		C17	1-124-510-11	ELECT	220MF	20%	25V						
C2	1-164-215-11	CERAMIC CHIP	68PF	5%	500V	C18	1-124-510-11	ELECT	220MF	20%	25V						
C3	1-164-215-11	CERAMIC CHIP	68PF	5%	500V	C19	1-123-875-11	ELECT	10MF	20%	50V						
C4	1-164-215-11	CERAMIC CHIP	68PF	5%	500V	C20	1-123-330-00	ELECT	22MF	20%	25V						
C5	1-164-215-11	CERAMIC CHIP	68PF	5%	500V	C21	1-136-173-00	FILM	0.47MF	5%	50V						
C6	1-164-215-11	CERAMIC CHIP	68PF	5%	500V	C22	1-136-165-00	FILM	0.1MF	5%	50V						
<b>PLUG</b>																	
CNC-1 * 1-564-505-11 PLUG CONNECTOR 2P																	
CNC-2 * 1-564-506-11 PLUG CONNECTOR 3P																	
CNC-3 * 1-508-784-00 PIN CONNECTOR (5MM PITCH) 1P																	
<b>LAMP</b>																	
NL1	1-519-276-00	LAMP, NEON				C27	1-124-122-11	ELECT	100MF	20%	25V						
NL2	1-519-276-00	LAMP, NEON				C28	1-124-791-11	ELECT	1MF	20%	50V						
NL3	1-519-276-00	LAMP, NEON				C29	1-108-638-11	MYLAR	0.1MF	10%	100V						
<b>RESISTOR</b>																	
R1	1-202-561-00	SOLID	330	10%	1/2W	C30	1-124-791-11	ELECT	1MF	20%	50V						
R2	1-202-561-00	SOLID	330	10%	1/2W	C31	1-123-875-11	ELECT	10MF	20%	50V						
R3	1-202-561-00	SOLID	330	10%	1/2W	C32	1-102-973-00	CERAMIC	100PF	5%	50V						
R4	1-202-849-00	SOLID	820K	10%	1/2W	C33	1-130-471-00	FILM	0.001MF	5%	50V						
<b>SOCKET</b>																	
S1	1-540-049-11	SOCKET, PICTURE TUBE				C34	1-136-153-00	FILM	0.01MF	5%	50V						
<b>DISCHARGING GAP</b>																	
SG1	1-519-063-XX	DISCHARGING GAP				C35	1-124-165-00	FILM	0.1MF	5%	50V						
SG2	1-519-063-XX	DISCHARGING GAP				C36	1-124-122-11	ELECT	100MF	20%	25V						
SG3	1-519-063-XX	DISCHARGING GAP				C38	1-123-875-11	ELECT	10MF	20%	50V						
*****																	
<b>E BOARD, COMPLETE</b>																	
*****																	
4-029-924-01 HOLDER (S), IC																	
* 4-341-751-01 EYELET (EY4-EY14)																	
* 4-341-752-01 EYELET (EY1-EY3)																	
4-391-550-01 SCREW (M5X15) (A), LOCK																	
<b>CAPACITOR</b>																	
C1	1-102-110-00	CERAMIC	220PF	10%	50V	C43	1-130-012-00	FILM	330PF	5%	50V						
C2	1-126-523-11	ELECT	47MF	20%	250V	C44	1-101-361-00	CERAMIC	150PF	5%	50V						
C3	1-136-153-00	FILM	0.01MF	5%	50V	C45	1-136-165-00	FILM	0.1MF	5%	50V						
C4	1-101-888-00	CERAMIC	68PF	5%	50V	C46	1-136-157-00	FILM	0.022MF	5%	50V						
C5	1-108-692-11	MYLAR	0.01MF	10%	200V	C47	1-130-017-00	FILM	820PF	10%	50V						
C7	1-136-128-00	FILM	1.2MF	5%	400V	C48	1-124-791-11	ELECT	1MF	20%	50V						
C8	1-108-816-11	MYLAR	0.1MF	5%	50V	C49	1-130-471-00	FILM	0.001MF	5%	50V						
C9	1-124-122-11	ELECT	100MF	20%	25V	C50	1-136-165-00	FILM	0.1MF	5%	50V						
C10	1-108-686-11	MYLAR	0.0033MF	10%	100V	C51	1-124-510-11	ELECT	220MF	20%	25V						
C11	1-108-688-11	MYLAR	0.0047MF	10%	200V	C52	1-108-796-11	MYLAR	0.0022MF	5%	50V						
C12	1-136-749-11	FILM	0.36MF	5%	400V	C53	1-126-163-11	ELECT	4.7MF	20%	50V						
C13	1-136-750-11	FILM	0.0047MF	3%	2KV	C54	1-136-165-00	FILM	0.1MF	5%	50V						
C14	1-162-115-00	CERAMIC	330PF	10%	2KV	C55	1-126-170-11	ELECT	1000MF	20%	50V						
C15	1-162-115-00	CERAMIC	330PF	10%	2KV	C56	1-126-170-11	ELECT	1000MF	20%	50V						
C16	1-136-559-11	FILM	0.0047MF	10%	630V	C57	1-126-170-11	ELECT	1000MF	20%	50V						
<b>PLUG</b>																	
CNE-1 * 1-560-177-00 CONNECTOR 4P																	
CNE-2 * 1-564-514-11 PLUG CONNECTOR 11P																	
CNE-3 * 1-564-507-11 PLUG CONNECTOR 4P																	
CNE-4 * 1-564-508-11 PLUG CONNECTOR 5P																	
CNE-5 * 1-564-516-11 PLUG CONNECTOR 13P																	
CNE-6 * 1-560-178-00 CONNECTOR 6P																	

**DDM-2801C/2802C**  
**DDM-2801C2/2802C2**

**E**

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark		
<b>DIODE</b>									
D1	8-719-200-02	DIODE 10E-2		Q7	8-729-820-73	TRANSISTOR 2SC3746			
D2	8-719-981-00	DIODE ERC81-004			4-875-726-00	SHEET, INSULATING ; (Q7)			
D3	8-719-970-89	DIODE DD50R		Q8	4-382-854-11	SCREW (M3X10), P, SW(+) (Q7)			
	4-391-517-01	INSULATOR (A) ; (D3)			8-729-820-71	TRANSISTOR 2SC3998			
	4-391-547-01	IC HOLDER ; (D3)			4-391-515-01	SHEET, INSULATING ; (Q8)			
D4	8-719-920-67	DIODE ERC91-02		Q9	4-391-547-01	IC HOLDER ; (Q8)			
D5	8-719-920-67	DIODE ERC91-02		Q10	8-729-266-83	TRANSISTOR 2SC2668			
				Q11	8-729-266-83	TRANSISTOR 2SC2668			
D6	8-719-109-85	DIODE RD5.1ESB2			8-729-119-78	TRANSISTOR 2SC2785-HFE			
D7	8-719-971-20	DIODE ERC38-06		Q12	8-729-119-76	TRANSISTOR 2SA1175-HFE			
D8	8-719-110-17	DIODE RD10ESB2		Q13	8-729-119-78	TRANSISTOR 2SC2785-HFE			
D9	8-719-109-85	DIODE RD5.1ESB2		Q14	8-729-119-78	TRANSISTOR 2SC2785-HFE			
D10	8-719-812-41	DIODE TLR124		Q16	8-729-122-12	TRANSISTOR 2SA1221-L			
D11	8-719-200-02	DIODE 10E2		Q17	8-729-119-76	TRANSISTOR 2SA1175-HFE			
D12	8-719-110-17	DIODE RD10ESB2		Q18	8-729-697-92	TRANSISTOR 2SA979			
D13	8-719-812-41	DIODE TLR124		Q19	8-729-195-82	TRANSISTOR 2SC2958			
D14	8-719-109-81	DIODE RD4.7ESB2		Q20	8-729-805-05	TRANSISTOR 2SC3601			
D15	8-719-911-19	DIODE 1SS119		Q21	8-729-802-71	TRANSISTOR 2SA1407-D			
D16	8-719-971-20	DIODE ERC38-06		Q22	8-729-304-49	TRANSISTOR 2SC3519S-Y			
D17	8-719-911-19	DIODE 1SS119			4-391-515-01	SHEET, INSULATING ; (Q22)			
D18	8-719-911-19	DIODE 1SS119			4-391-547-01	IC HOLDER ; (Q22)			
D19	8-719-971-20	DIODE ERC38-06		Q23	8-729-301-86	TRANSISTOR 2SA1386-Y			
D20	8-719-000-28	THYRISTOR CR02AM-8			4-391-515-01	SHEET, INSULATING ; (Q23)			
					4-391-547-01	IC HOLDER ; (Q23)			
D21	8-719-911-19	DIODE 1SS119		Q24	8-729-900-36	TRANSISTOR DTC124ES			
D22	8-719-911-19	DIODE 1SS119		<b>RESISTOR</b>					
D23	8-719-109-85	DIODE RD5.1ESB2		R1	1-249-425-11	CARBON	4.7K	5%	1/4W
D24	8-719-109-85	DIODE RD5.1ESB2		R2	1-249-425-11	CARBON	4.7K	5%	1/4W
D25	8-719-911-19	DIODE 1SS119		R3	1-247-752-11	CARBON	1K	5%	1/2W
				R4	1-215-437-00	METAL	4.7K	1%	1/6W
				R5	1-215-437-00	METAL	4.7K	1%	1/6W
<b>IC</b>									
IC1	8-759-990-82	IC TL082CP		R6	1-249-429-11	CARBON	10K	5%	1/4W
IC2	8-719-933-26	DIODE PC910		R7	1-216-439-00	METAL OXIDE	12K	5%	1W
IC3	8-759-803-42	IC LA6500-FA		R8	1-216-440-00	METAL OXIDE	18K	5%	1W
	4-391-515-01	INSULATOR (A) ; (IC3)		R9	1-249-413-11	CARBON	470	5%	1/4W
	4-391-547-01	IC HOLDER ; (IC3)		R10	1-249-417-11	CARBON	1K	5%	1/4W
IC4	8-759-008-72	IC LM393N							
IC5	8-759-109-82	IC UPC814C		R11	1-249-417-11	CARBON	1K	5%	1/4W
				R12	1-214-890-00	METAL	12K	1%	1/2W
IC6	8-759-982-13	IC RC7812FA		R13	1-214-890-00	METAL	12K	1%	1/2W
	4-391-515-01	INSULATOR (A) ; (IC6)		R14	1-214-890-00	METAL	12K	1%	1/2W
IC7	8-759-179-12	IC MPC7912H		R15	1-215-429-00	METAL	2.2K	1%	1/6W
	4-391-515-01	INSULATOR (A) ; (IC7)							
	4-391-547-01	IC HOLDER ; (IC7)		R16	1-249-405-11	CARBON	100	5%	1/4W
IC8	8-759-982-21	IC RC78L05A		R17	1-249-401-11	CARBON	47	5%	1/4W
IC9	8-759-821-42	IC LA7851		R18	1-249-407-11	CARBON	150	5%	1/4W
IC10	8-759-179-12	IC CPC7912H		R19	1-216-398-11	METAL OXIDE	5.6	5%	3W
	4-382-854-11	SCREW (M3X10), P, SW(+) (IC10)		R20	1-216-398-11	METAL OXIDE	5.6	5%	3W
<b>COIL</b>									
L1	1-421-421-00	COIL, CHOKE		R21	1-215-887-00	METAL	150	5%	2W
L2	1-459-920-11	COIL, HORIZONTAL LINEARITY		R22	1-217-418-00	FUSIBLE	0.47	10%	1/2W
L3	1-424-017-11	HCL		R23	1-217-418-00	FUSIBLE	0.47	10%	1/2W
L4	1-421-421-00	COIL, CHOKE		R24	1-215-421-00	METAL	1K	1%	1/6W
L5	1-421-421-00	COIL, CHOKE		R25	1-215-429-00	METAL	2.2K	1%	1/6W
L6	1-410-688-31	INDUCTOR		R26	1-249-413-11	CARBON	470	5%	1/4W
			1.5MMH	R27	1-215-445-00	METAL	10K	1%	1/6W
				R28	1-249-429-11	CARBON	10K	5%	1/4W
				R29	1-215-467-00	METAL	82K	1%	1/6W
				R30	1-215-445-00	METAL	10K	1%	1/6W
<b>TRANSISTOR</b>									
Q1	8-729-266-83	TRANSISTOR 2SC2668		R31	1-216-345-11	METAL OXIDE	0.47	5%	1W
Q2	8-729-301-82	TRANSISTOR 2SC3519-Y		R32	1-249-429-11	CARBON	10K	5%	1/4W
	4-391-515-01	INSULATOR (A) ; (Q2)		R33	1-249-425-11	CARBON	4.7K	5%	1/4W
	4-391-547-01	IC HOLDER ; (Q2)		R34	1-249-413-11	CARBON	470	5%	1/4W
Q3	8-729-140-50	TRANSISTOR 2SC3209-LK		R35	1-247-752-11	CARBON	1K	5%	1/2W
Q4	8-729-140-50	TRANSISTOR 2SC3209-LK							
Q5	8-729-177-42	TRANSISTOR 2SD774-3		R36	1-249-414-11	CARBON	560	5%	1/4W
Q6	8-729-140-97	TRANSISTOR 2SB734-34		R37	1-249-412-11	CARBON	390	5%	1/4W
				R38	1-249-437-11	CARBON	47K	5%	1/4W
				R39	1-247-895-00	CARBON	470K	5%	1/4W
				R40	1-249-421-11	CARBON	2.2K	5%	1/4W

E EA

Ref.No	Part No.	Description	Remark			Ref.No	Part No.	Description	Remark		
R41	1-249-425-11	CARBON	4.7K	5%	1/4W	R117	1-214-799-11	METAL	2	1%	1/2W
R42	1-249-425-11	CARBON	4.7K	5%	1/4W	R118	1-214-799-11	METAL	2	1%	1/2W
R43	1-249-437-11	CARBON	47K	5%	1/4W	R119	1-215-421-00	METAL	1K	1%	1/6W
R44	1-249-435-11	CARBON	33K	5%	1/4W	R120	1-249-421-11	CARBON	2.2K	5%	1/4W
R45	1-247-895-00	CARBON	470K	5%	1/4W	R121	1-249-423-11	CARBON	3.3K	5%	1/4W
R46	1-249-425-11	CARBON	4.7K	5%	1/4W	R122	1-249-405-11	CARBON	100	5%	1/4W
R47	1-249-429-11	CARBON	10K	5%	1/4W	R123	1-215-914-11	METAL OXIDE	330	5%	3W F
R48	1-249-425-11	CARBON	4.7K	5%	1/4W	R124	1-249-413-11	CARBON	470	5%	1/4W
R50	1-249-429-11	CARBON	10K	5%	1/4W	R125	1-249-417-11	CARBON	1K	5%	1/4W
R51	1-249-425-11	CARBON	4.7K	5%	1/4W	R126	1-249-417-11	CARBON	1K	5%	1/4W
R52	1-249-429-11	CARBON	10K	5%	1/4W	R127	1-216-390-11	METAL OXIDE	1.2	5%	3W F
R53	1-215-445-00	METAL	10K	1%	1/6W	R128	1-215-421-00	METAL	1K	1%	1/6W
R54	1-249-429-11	CARBON	10K	5%	1/4W	R129	1-214-773-00	METAL	68K	1%	1/4W
R55	1-215-445-00	METAL	10K	1%	1/6W	R130	1-214-773-00	METAL	68K	1%	1/4W
R56	1-215-437-00	METAL	4.7K	1%	1/6W	R131	1-249-429-11	CARBON	10K	5%	1/4W
R57	1-215-471-00	METAL	120K	1%	1/6W	R132	1-249-439-11	CARBON	68K	5%	1/4W
R58	1-215-437-00	METAL	4.7K	1%	1/6W	R133	1-249-439-11	CARBON	68K	5%	1/4W
R59	1-215-445-00	METAL	10K	1%	1/6W	R134	1-249-439-11	CARBON	68K	5%	1/4W
R61	1-249-425-11	CARBON	4.7K	5%	1/4W	R135	1-249-439-11	CARBON	68K	5%	1/4W
R63	1-249-405-11	CARBON	100	5%	1/4W	R136	1-249-423-11	CARBON	3.3K	5%	1/4W
R65	1-249-417-11	CARBON	1K	5%	1/4W	R137	1-214-799-11	METAL	2	1%	1/2W
R66	1-249-414-11	CARBON	560	5%	1/4W	R138	1-214-799-11	METAL	2	1%	1/2W
R67	1-215-421-00	METAL	1K	1%	1/6W	R139	1-215-461-00	METAL	47K	1%	1/6W
R69	1-249-423-11	CARBON	3.3K	5%	1/4W	R140	1-249-397-11	CARBON	22	5%	1/4W F
R70	1-249-433-11	CARBON	22K	5%	1/4W	R143	1-216-398-11	METAL OXIDE	5.6	5%	3W F
R71	1-249-430-11	CARBON	12K	5%	1/4W	R144	1-215-419-00	METAL	820	1%	1/6W
R72	1-215-423-00	METAL	1.2K	1%	1/6W	R145	1-249-405-11	CARBON	100	5%	1/4W
R73	1-249-417-11	CARBON	1K	5%	1/4W	<u>VARIABLE RESISTOR</u>					
R75	1-215-473-00	METAL	150K	1%	1/6W	RV1	1-237-499-21	RES, ADJ, CERMET 500			
R76	1-249-435-11	CARBON	33K	5%	1/4W	RV2	1-237-504-21	RES, ADJ, CERMET 20K			
R77	1-249-417-11	CARBON	1K	5%	1/4W	RV3	1-237-516-21	RES, ADJ, CERMET 2K			
R78	1-249-405-11	CARBON	100	5%	1/4W	RV4	1-237-522-21	RES, ADJ, CERMET 200K			
R79	1-215-449-00	METAL	15K	1%	1/6W	<u>TRANSFORMER</u>					
R80	1-249-433-11	CARBON	22K	5%	1/4W	T1	1-424-137-11	TRANSFORMER, HORIZONTAL DRIVE			
R81	1-215-469-00	METAL	100K	1%	1/6W	T2	1-439-444-11	TRANSFORMER, HORIZONTAL OUTPUT			
R82	1-215-457-00	METAL	33K	1%	1/6W	T3	1-424-138-12	TRANSFORMER, CORRECTION			
R83	1-249-422-11	CARBON	2.7K	5%	1/4W	*****					
R84	1-249-430-11	CARBON	12K	5%	1/4W	* A-1341-279-A EA BOARD, COMPLETE					
R85	1-249-431-11	CARBON	15K	5%	1/4W	*****					
R86	1-249-417-11	CARBON	1K	5%	1/4W	* 1-506-603-11 PLUG, L TYPE (2.0MM PIT) 10P					
R90	1-215-442-00	METAL	7.5K	1%	1/6W	<u>CAPACITOR</u>					
R91	1-215-421-00	METAL	1K	1%	1/6W	C1	1-163-989-11	CERAMIC CHIP	0.033MF	5%	25V
R92	1-215-417-00	METAL	680	1%	1/6W	C2	1-163-037-11	CERAMIC CHIP	0.022MF	5%	25V
R93	1-215-421-00	METAL	1K	1%	1/6W	C3	1-163-137-00	CERAMIC CHIP	680PF	5%	50V
R94	1-215-433-00	METAL	3.3K	1%	1/6W	C4	1-163-137-00	CERAMIC CHIP	680PF	5%	50V
R95	1-249-420-11	CARBON	1.8K	5%	1/4W	C5	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
R98	1-249-425-11	CARBON	4.7K	5%	1/4W	*****					
R99	1-249-425-11	CARBON	4.7K	5%	1/4W	C6	1-130-014-00	FILM	470PF	5%	50V
R100	1-249-417-11	CARBON	1K	5%	1/4W	C7	1-126-157-11	ELECT	10MF	20%	16V
R101	1-249-419-11	CARBON	1.5K	5%	1/4W	C8	1-126-157-11	ELECT	10MF	20%	16V
R102	1-249-417-11	CARBON	1K	5%	1/4W	C12	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
R103	1-249-425-11	CARBON	4.7K	5%	1/4W	<u>IC</u>					
R104	1-215-433-00	METAL	3.3K	1%	1/6W	IC1	8-759-700-43	IC RC4558M			
R105	1-216-489-11	METAL OXIDE	27K	5%	3W F	IC2	8-759-103-09	IC UPC4082G2			
R106	1-249-406-11	CARBON	120	5%	1/4W F	IC4	8-759-981-64	IC LM2903DQ			
R107	1-249-406-11	CARBON	120	5%	1/4W	<u>TRANSISTOR</u>					
R108	1-249-411-11	CARBON	330	5%	1/4W F	Q1	8-729-100-66	TRANSISTOR 2SC1623			
R109	1-217-465-00	FUSIBLE	0.47	10%	1W F	Q2	8-729-162-13	TRANSISTOR 2SC1621			
R110	1-217-465-00	FUSIBLE	0.47	10%	1W F	Q3	8-729-100-66	TRANSISTOR 2SC1623			
R111	1-249-417-11	CARBON	1K	5%	1/4W						
R112	1-249-405-11	CARBON	100	5%	1/4W						
R113	1-216-462-00	METAL OXIDE	8.2K	5%	2W F						
R114	1-215-886-11	METAL OXIDE	100	5%	2W F						
R115	1-216-453-00	METAL OXIDE	270	5%	2W F						
R116	1-215-913-11	METAL OXIDE	220	5%	3W F						

**DDM-2801C/2802C**  
**DDM-2801C2/2802C2**

**EA S**

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark				
Q4	8-729-100-66	TRANSISTOR	2SC1623	C26	1-124-513-11	ELECT	47MF 20% 50V				
Q5	8-729-116-05	TRANSISTOR	2SK160-K5	C27	1-124-126-00	ELECT	47MF 20% 25V				
<b>RESISTOR</b>											
JW1	1-216-296-00	METAL GLAZE	0 5% 1/8W	C29	1-136-165-00	FILM	0.1MF 5% 50V				
JW2	1-216-296-00	METAL GLAZE	0 5% 1/8W	C33	1-136-103-00	FILM	0.1MF 5% 200V				
JW3	1-216-296-00	METAL GLAZE	0 5% 1/8W	C34	1-124-126-00	ELECT	47MF 20% 25V				
JW4	1-216-296-00	METAL GLAZE	0 5% 1/8W	C35	1-130-479-00	MYLAR	0.0047MF 5% 50V				
JW5	1-216-296-00	METAL GLAZE	0 5% 1/8W	C36	1-124-126-00	ELECT	47MF 20% 25V				
JW6	1-216-296-00	METAL GLAZE	0 5% 1/8W	C38	1-136-165-00	FILM	0.1MF 5% 50V				
JW7	1-216-296-00	METAL GLAZE	0 5% 1/8W	C40	1-136-165-00	FILM	0.1MF 5% 50V				
JW8	1-216-295-00	METAL GLAZE	0 5% 1/10W	C41	1-124-126-00	ELECT	47MF 20% 25V				
JW9	1-216-296-00	METAL GLAZE	0 5% 1/8W	C43	1-136-165-00	FILM	0.1MF 5% 50V				
JW10	1-216-296-00	METAL GLAZE	0 5% 1/8W	C46	1-136-165-00	FILM	0.1MF 5% 50V				
JW11	1-216-296-00	METAL GLAZE	0 5% 1/8W	C48	1-136-165-00	FILM	0.1MF 5% 50V				
JW12	1-216-296-00	METAL GLAZE	0 5% 1/8W	C50	1-136-165-00	FILM	0.1MF 5% 50V				
R4	1-216-049-00	METAL GLAZE	1K 5% 1/10W	C51	1-124-126-00	ELECT	47MF 20% 25V				
R7	1-216-045-00	METAL GLAZE	680 5% 1/10W	C52	1-136-153-00	FILM	0.01MF 5% 50V				
R8	1-216-055-00	METAL GLAZE	1.8K 5% 1/10W	C54	1-136-153-00	FILM	0.01MF 5% 50V				
R9	1-216-055-00	METAL GLAZE	1.8K 5% 1/10W	C55	1-136-153-00	FILM	0.01MF 5% 50V				
R10	1-216-045-00	METAL GLAZE	680 5% 1/10W	C56	1-136-153-00	FILM	0.01MF 5% 50V				
R11	1-216-081-00	METAL GLAZE	22K 5% 1/10W	C57	1-136-153-00	FILM	0.01MF 5% 50V				
R13	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	C58	1-136-153-00	FILM	0.01MF 5% 50V				
R15	1-216-089-00	METAL GLAZE	47K 5% 1/10W	C59	1-136-153-00	FILM	0.01MF 5% 50V				
R16	1-216-073-00	METAL GLAZE	10K 5% 1/10W	C60	1-136-153-00	FILM	0.01MF 5% 50V				
R17	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	C61	1-124-126-00	ELECT	47MF 20% 25V				
R18	1-249-417-11	CARBON	1K 5% 1/4W	C62	1-124-126-00	ELECT	47MF 20% 25V				
R19	1-216-071-00	METAL GLAZE	8.2K 5% 1/10W	C63	1-124-126-00	ELECT	47MF 20% 25V				
R20	1-249-417-11	CARBON	1K 5% 1/4W	C64	1-124-126-00	ELECT	47MF 20% 25V				
R21	1-249-417-11	CARBON	1K 5% 1/4W	C65	1-124-126-00	ELECT	47MF 20% 25V				
R22	1-216-061-00	METAL GLAZE	3.3K 5% 1/10W	C66	1-124-126-00	ELECT	47MF 20% 25V				
R23	1-249-425-11	CARBON	4.7K 5% 1/4W	C67	1-124-126-00	ELECT	47MF 20% 25V				
R24	1-216-667-11	METAL CHIP	4.7K 0.50% 1/10W	C68	1-124-126-00	ELECT	47MF 20% 25V				
R26	1-216-077-00	METAL GLAZE	15K 5% 1/10W	C69	1-126-103-11	ELECT	470MF 20% 16V				
R27	1-216-073-00	METAL GLAZE	10K 5% 1/10W	C70	1-124-126-00	ELECT	47MF 20% 25V				
R29	1-216-049-00	METAL GLAZE	1K 5% 1/10W	C71	1-124-126-00	ELECT	47MF 20% 25V				
***** S BOARD, COMPLETE *****											
4-029-923-01	SHEET, (F) INSULATOR			C72	1-136-153-00	FILM	0.01MF 5% 50V				
4-029-924-01	HOLDER, (S) IC			C74	1-130-471-00	MYLAR	0.001MF 5% 50V				
4-391-546-01	HOLDER, (WB) IC			C76	1-130-471-00	MYLAR	0.001MF 5% 50V				
4-391-547-01	HOLDER, IC			C77	1-130-471-00	MYLAR	0.001MF 5% 50V				
4-391-550-01	SCREW (M5X15) (A), LOCK			C78	1-130-471-00	MYLAR	0.001MF 5% 50V				
<b>CAPACITOR</b>											
C1	1-124-126-00	ELECT	47MF 20% 25V	C79	1-130-471-00	MYLAR	0.001MF 5% 50V				
C3	1-123-605-00	ELECT	100MF 20% 100V	C80	1-130-471-00	MYLAR	0.001MF 5% 50V				
C4	1-123-605-00	ELECT	100MF 20% 100V	C81	1-130-471-00	MYLAR	0.001MF 5% 50V				
C7	1-136-153-00	FILM	0.01MF 5% 50V	C82	1-136-153-00	FILM	0.01MF 5% 50V				
C8	1-101-361-00	CERAMIC	150PF 5% 50V	<b>PLUG</b>							
C9	1-136-103-00	FILM	0.1MF 5% 200V	CNS-1	*1-564-515-11	PLUG CONNECTOR 12P					
C15	1-102-980-00	CERAMIC	270PF 5% 50V	CNS-2	*1-564-509-11	PLUG CONNECTOR 6P					
C16	1-102-951-00	CERAMIC	15PF 5% 50V	CNS-3	*1-564-513-11	PLUG CONNECTOR 10P					
C17	1-101-361-00	CERAMIC	150PF 5% 50V	CNS-4	*1-564-506-11	PLUG CONNECTOR 3P					
C18	1-136-103-00	FILM	0.1MF 5% 200V	CNS-5	*1-564-506-11	PLUG CONNECTOR 3P					
C19	1-124-126-00	ELECT	47MF 20% 25V	CNS-6	*1-564-512-11	PLUG CONNECTOR 9P					
C20	1-126-103-11	ELECT	470MF 20% 16V	CNS-7	*1-564-508-11	PLUG CONNECTOR 5P					
C21	1-126-103-11	ELECT	470MF 20% 16V	CNS-8	*1-564-507-11	PLUG CONNECTOR 4P					
C22	1-108-692-11	MYLAR	0.01MF 10% 200V	CNS-9	*1-564-517-11	PLUG CONNECTOR 2P					
C23	1-123-330-00	ELECT	22MF 20% 25V	<b>DIODE</b>							
C24	1-108-692-11	MYLAR	0.01MF 10% 200V	D1	8-719-911-19	DIODE	ISS119				
C25	1-123-330-00	ELECT	22MF 20% 25V	D2	8-719-911-19	DIODE	ISS119				
				D3	8-719-911-19	DIODE	ISS119				
				D4	8-719-911-19	DIODE	ISS119				
				D5	8-719-971-20	DIODE	ERC38-06				
				D6	8-719-109-85	DIODE	RD5.1ESB2				
				D7	8-719-911-19	DIODE	ISS119				
				D8	8-719-971-20	DIODE	ERC38-06				
				D9	8-719-109-85	DIODE	RD5.1ESB2				
				D10	8-719-911-19	DIODE	ISS119				

DDM-2801C/2802C  
DDM-2801C2/2802C2

S

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
D11	8-719-812-41	DIODE TLR124		R23	1-216-449-11	METAL OXIDE	56 5% 2W F
D12	8-719-911-19	DIODE 1SS119		R24	1-215-429-00	METAL	2.2K 1% 1/6W
<u>IC</u>							
IC2	8-759-982-21	IC RC78L05A		R25	1-214-792-00	METAL	1 1% 1/2W
IC3	8-759-977-78	IC MB88342P		R26	1-214-792-00	METAL	1 1% 1/2W
IC4	8-759-803-42	IC LA6500-FA		R33	1-215-429-00	METAL	2.2K 1% 1/6W
IC6	8-759-803-42	IC LA6500-FA		R34	1-215-437-00	METAL	4.7K 1% 1/6W
IC7	8-759-803-42	IC LA6500-FA		R35	1-249-425-11	CARBON	4.7K 5% 1/4W
IC8	8-759-803-42	IC LA6500-FA		R36	1-249-417-11	CARBON	1K 5% 1/4W
IC9	8-759-803-42	IC LA6500-FA		R37	1-249-417-11	CARBON	1K 5% 1/4W
IC10	8-759-803-42	IC LA6500-FA		R38	1-215-921-11	METAL OXIDE	4.7K 5% 3W F
IC11	8-759-803-42	IC LA6500-FA		R39	1-249-393-11	CARBON	10 5% 1/4W
IC12	8-759-803-42	IC LA6500-FA		R40	1-249-405-11	CARBON	100 5% 1/4W
IC13	8-759-803-42	IC LA6500-FA		R41	1-249-421-11	CARBON	2.2K 5% 1/4W
IC14	8-759-103-93	IC UPC393C		R42	1-249-405-11	CARBON	100 5% 1/4W F
<u>COIL</u>							
L1	1-421-421-00	COIL, CHOKE	100UH	R43	1-249-421-11	CARBON	2.2K 5% 1/4W
L2	1-421-421-00	COIL, CHOKE	100UH	R44	1-249-405-11	CARBON	100 5% 1/4W
L3	1-421-421-00	COIL, CHOKE	100UH	R45	1-249-405-11	CARBON	100 5% 1/4W
L4	1-421-421-00	COIL, CHOKE	100UH	R46	1-217-465-00	FUSIBLE	0.47 10% 1W F
L5	1-421-421-00	COIL, CHOKE	100UH	R47	1-217-465-00	FUSIBLE	0.47 10% 1W F
<u>TRANSISTOR</u>							
Q3	8-729-309-36	TRANSISTOR 2SA893A		R48	1-215-429-00	METAL	2.2K 1% 1/6W
Q4	8-729-309-36	TRANSISTOR 2SA893A		R49	1-216-449-11	METAL OXIDE	56 5% 2W F
Q5	8-729-207-82	TRANSISTOR 2SC3421-Y		R50	1-214-792-00	METAL	1 1% 1/2W
Q6	8-729-207-82	TRANSISTOR 2SC3421-Y		R51	1-214-792-00	METAL	1 1% 1/2W
Q7	8-729-207-89	TRANSISTOR 2SA1358-Y		R52	1-215-437-00	METAL	4.7K 1% 1/6W
Q8	8-729-301-82	TRANSISTOR 2SC3519-Y		R53	1-215-413-00	METAL	470 1% 1/6W
Q9	8-729-301-86	TRANSISTOR 2SA1386-Y		R54	1-215-437-00	METAL	4.7K 1% 1/6W
Q12	8-729-309-36	TRANSISTOR 2SA893A		R55	1-215-413-00	METAL	470 1% 1/6W
Q13	8-729-309-36	TRANSISTOR 2SA893A		R56	1-249-433-11	CARBON	22K 5% 1/4W
Q14	8-729-207-82	TRANSISTOR 2SC3421-Y		R57	1-249-425-11	CARBON	4.7K 5% 1/4W
Q15	8-729-207-82	TRANSISTOR 2SC3421-Y		R58	1-249-441-11	CARBON	100K 5% 1/4W
Q16	8-729-207-89	TRANSISTOR 2SA1358-Y		R59	1-249-433-11	CARBON	22K 5% 1/4W
Q17	8-729-301-82	TRANSISTOR 2SC3519-Y		R60	1-249-425-11	CARBON	4.7K 5% 1/4W
Q18	8-729-301-86	TRANSISTOR 2SA1386-Y		R61	1-249-441-11	CARBON	100K 5% 1/4W
Q21	8-729-119-76	TRANSISTOR 2SA1175-HFE		R62	1-249-421-11	CARBON	2.2K 5% 1/4W
DDM-2801C; Serial No. 10,001~10,091							
Q22	8-729-900-36	TRANSISTOR DTC124ES		R63	1-249-425-11	CARBON	4.7K 5% 1/4W
Q23	8-729-107-84	TRANSISTOR 2SC3623A-L		R64	1-249-422-11	CARBON	2.7K 5% 1/4W
Q24	8-729-107-84	TRANSISTOR 2SC3623A-L		R65	1-249-425-11	CARBON	4.7K 5% 1/4W
Q25	8-729-119-78	TRANSISTOR 2SC2785-HFE		R66	1-215-461-00	METAL	47K 1% 1/6W
Q26	8-729-119-78	TRANSISTOR 2SC2785-HFE		R67	1-215-449-00	METAL	15K 1% 1/6W
Q27	8-729-900-36	TRANSISTOR DTC124ES		R68	1-215-453-00	METAL	22K 1% 1/6W
<u>RESISTOR</u>							
R6	1-215-437-00	METAL	4.7K 1% 1/6W	R70	1-215-885-00	METAL OXIDE	68 5% 2W F
R8	1-215-437-00	METAL	4.7K 1% 1/6W	R77	1-215-453-00	METAL	22K 1% 1/6W
R9	1-249-425-11	CARBON	4.7K 5% 1/4W	R78	1-249-429-11	CARBON	10K 5% 1/4W
R10	1-249-417-11	CARBON	1K 5% 1/4W	R79	1-215-453-00	METAL	22K 1% 1/6W
R11	1-249-427-11	CARBON	6.8K 5% 1/4W	R81	1-215-880-00	METAL OXIDE	10 5% 2W F
R12	1-249-417-11	CARBON	1K 5% 1/4W	R82	1-215-445-00	METAL	10K 1% 1/6W
R13	1-215-921-11	METAL OXIDE	4.7K 5% 3W F	R83	1-249-427-11	CARBON	6.8K 5% 1/4W
R14	1-249-393-11	CARBON	10 5% 1/4W	R84	1-215-453-00	METAL	22K 1% 1/6W
R15	1-249-405-11	CARBON	100 5% 1/4W	R85	1-249-429-11	CARBON	10K 5% 1/4W
R16	1-249-421-11	CARBON	2.2K 5% 1/4W	R86	1-249-405-11	CARBON	100 5% 1/4W
R17	1-249-405-11	CARBON	100 5% 1/4W F	R87	1-249-417-11	CARBON	1K 5% 1/4W
R18	1-249-405-11	CARBON	100 5% 1/4W	R88	1-249-417-11	CARBON	1K 5% 1/4W
R19	1-249-405-11	CARBON	100 5% 1/4W	R89	1-249-417-11	CARBON	1K 5% 1/4W
R20	1-249-421-11	CARBON	2.2K 5% 1/4W	R90	1-249-441-11	CARBON	100K 5% 1/4W
R21	1-217-465-00	FUSIBLE	0.47 10% 1W F	R91	1-249-441-11	CARBON	100K 5% 1/4W
R22	1-217-465-00	FUSIBLE	0.47 10% 1W F	R92	1-249-441-11	CARBON	100K 5% 1/4W
				R93	1-215-453-00	METAL	22K 1% 1/6W
				R94	1-249-429-11	CARBON	10K 5% 1/4W
				R95	1-215-453-00	METAL	22K 1% 1/6W
				R97	1-215-882-00	METAL OXIDE	22 5% 2W F
				R98	1-215-453-00	METAL	22K 1% 1/6W
				R99	1-249-429-11	CARBON	10K 5% 1/4W
				R100	1-215-453-00	METAL	22K 1% 1/6W
				R102	1-215-882-00	METAL OXIDE	22 5% 2W F
				R103	1-215-453-00	METAL	22K 1% 1/6W

**DDM-2801C/2802C**  
**DDM-2801C2/2802C2**

**S J1 J2 J3 P**

Les composants identifiés par une trame et une marque **▲** sont critiques pour la sécurité.  
 Ne les remplacer que par une pièce portant le numéro spécifié.

The components identified by shading and mark **▲** are critical for safety.  
 Replace only with part number specified.

Ref.No	Part No.	Description	Remark		
R104	1-249-429-11	CARBON	10K	5%	1/4W
R105	1-215-453-00	METAL	22K	1%	1/6W
R107	1-215-882-00	METAL OXIDE	22	5%	2W
R108	1-249-417-11	CARBON	1K	5%	1/4W
R109	1-249-441-11	CARBON	100K	5%	1/4W
R113	1-215-453-00	METAL	22K	1%	1/6W
R114	1-249-429-11	CARBON	10K	5%	1/4W
R115	1-215-453-00	METAL	22K	1%	1/6W
R117	1-215-882-00	METAL OXIDE	22	5%	2W
R118	1-215-453-00	METAL	22K	1%	1/6W
R119	1-249-429-11	CARBON	10K	5%	1/4W
R120	1-215-453-00	METAL	22K	1%	1/6W
R122	1-215-882-00	METAL OXIDE	22	5%	2W
R123	1-215-453-00	METAL	22K	1%	1/6W
R124	1-249-429-11	CARBON	10K	5%	1/4W
R125	1-215-453-00	METAL	22K	1%	1/6W
R127	1-215-882-00	METAL OXIDE	22	5%	2W
R128	1-249-429-11	CARBON	10K	5%	1/4W
R129	1-249-429-11	CARBON	10K	5%	1/4W
R130	1-215-461-00	METAL	47K	1%	1/6W
R132	1-249-441-11	CARBON	100K	5%	1/4W
R133	1-249-433-11	CARBON	22K	5%	1/4W
R134	1-249-433-11	CARBON	22K	5%	1/4W
R138	1-249-429-11	CARBON	10K	5%	1/4W
R139	1-249-430-11	CARBON	12K	5%	1/4W
R140	1-249-430-11	CARBON	12K	5%	1/4W
R141	1-249-429-11	CARBON	10K	5%	1/4W
R142	1-249-421-11	CARBON	2.2K	5%	1/4W
R153	1-215-886-11	METAL OXIDE	100	5%	2W
R154	1-249-429-11	CARBON	10K	5%	1/4W
R155	1-215-437-00	METAL	4.7K	1%	1/6W
R156	1-247-903-00	CARBON	1M	5%	1/4W
R157	1-249-425-11	CARBON	4.7K	5%	1/4W
R158	1-249-425-11	CARBON	4.7K	5%	1/4W

VARIABLE, RESISTOR

RV1 1-237-503-21 RES, ADJ, CERMET 10K

Ref.No	Part No.	Description	Remark					
	*1-627-355-12	J2 BOARD	*****					
<u>VARIABLE, RESISTOR</u>								
RV1 1-228-594-00 RES, VAR, CARBON 10K								
*****								
*1-627-356-13 J3 BOARD								
*****								
<u>CAPACITOR</u>								
C1	1-136-165-00	FILM	0.1MF	5%	50V			
C2	1-136-165-00	FILM	0.1MF	5%	50V			
<u>RESISTOR</u>								
R1	1-249-409-11	CARBON	220	5%	1/4W			
<u>VARIABLE, RESISTOR</u>								
RV1 1-228-594-00 RES, VAR, CARBON 10K								
RV2 1-228-594-00 RES, VAR, CARBON 10K								
RV3 1-228-594-00 RES, VAR, CARBON 10K								
RV4 1-228-594-00 RES, VAR, CARBON 10K								
*****								
P BOARD, COMPLETE								
*****								
<u>CAPACITOR</u>								
C1	1-126-319-51	ELECT	10MF	20%	250V			
C2	1-108-824-00	MYLAR	0.47MF	5%	50V			
C3	1-102-228-00	CERAMIC	470PF	10%	500V			
C4	1-130-489-00	MYLAR	0.033MF	5%	50V			
C5	1-102-030-00	CERAMIC	330PF	10%	500V			
C6	1-130-475-00	MYLAR	0.0022MF	5%	50V			
C7	1-123-875-11	ELECT	10MF	20%	50V			
C8	1-130-471-00	MYLAR	0.001MF	5%	50V			
C9	1-124-122-11	ELECT	100MF	20%	25V			
C10	1-102-030-00	CERAMIC	330PF	10%	500V			
C11	1-136-060-00	FILM	0.047MF	5%	400V			
C12	1-136-064-00	FILM	0.002MF	3%	2KV			
C13	1-136-075-00	FILM	0.008MF	3%	2KV			
C14	1-124-798-11	ELECT	1MF	20%	160V			
C15	1-130-473-00	MYLAR	0.0015MF	5%	50V			
C16	1-124-122-11	ELECT	100MF	20%	25V			
C17	1-102-106-00	CERAMIC	100PF	10%	50V			
C18	1-130-479-00	MYLAR	0.0047MF	5%	50V			
C19	1-124-513-11	ELECT	47MF	20%	50V			
C20	1-124-122-11	ELECT	100MF	20%	25V			
C21	1-136-165-00	FILM	0.1MF	5%	50V			
C22	1-130-471-00	MYLAR	0.001MF	5%	50V			
C23	1-130-471-00	MYLAR	0.001MF	5%	50V			
C24	1-136-165-00	FILM	0.1MF	5%	50V			
C25	1-136-157-00	FILM	0.022MF	5%	50V			
C26	1-123-875-11	ELECT	10MF	20%	50V			
C27	1-136-153-00	FILM	0.01MF	5%	50V			
C28	1-124-513-11	ELECT	47MF	20%	50V			
C29	1-124-513-11	ELECT	47MF	20%	50V			

S1 ▲ 1-554-472-11 SWITCH, PUSH (1 KEY)

Les composants identifiés par une trame et une marque **▲** sont critiques pour la sécurité.  
Ne les remplacer que par une pièce portant le numéro spécifié.

The components identified by shading and mark **▲** are critical for safety.  
Replace only with part number specified.

Ref.No	Part No.	Description	Remark
C30	1-136-153-00	FILM	0.01MF 5% 50V
C31	1-124-513-11	ELECT	47MF 20% 50V
C32	1-124-513-11	ELECT	47MF 20% 50V
C33	1-123-875-11	ELECT	10MF 20% 50V
C34	1-136-165-00	FILM	0.1MF 5% 50V
C35	1-124-513-11	ELECT	47MF 20% 50V
C36	1-136-165-00	FILM	0.1MF 5% 50V
C37	1-124-122-11	ELECT	100MF 20% 25V
C39	1-136-161-00	FILM	0.047MF 5% 50V
C40	1-124-122-11	ELECT	100MF 20% 25V
C41	1-123-875-11	ELECT	10MF 20% 50V
C42	1-136-153-00	FILM	0.01MF 5% 50V
C43	1-130-471-00	MYLAR	0.001MF 5% 50V
C44	1-123-875-11	ELECT	10MF 20% 50V
C45	1-123-875-11	ELECT	10MF 20% 50V
C46	1-126-101-11	ELECT	100MF 20% 10V
C47	1-124-122-11	ELECT	100MF 20% 25V
C48	1-126-101-11	ELECT	100MF 20% 10V
C49	1-123-875-11	ELECT	10MF 20% 50V
C50	1-136-165-00	FILM	0.1MF 5% 50V
C51	1-136-161-00	FILM	0.047MF 5% 50V

PLUG

CNP-1 \*1-564-508-11 PLUG CONNECTOR 5P  
CNP-2 \*1-564-507-11 PLUG CONNECTOR 4P  
CNP-3 \*1-564-507-11 PLUG CONNECTOR 4P  
CNP-4 \*1-564-511-11 PLUG CONNECTOR 8P  
CNP-5 \*1-508-767-00 PIN, CONNECTOR (5MM PITCH) 5P

DIODE

D1	8-719-971-20	DIODE	ERC38-06
D2	8-719-939-07	DIODE	ERD38-06
D3	8-719-939-07	DIODE	ERD38-06
D4	8-719-911-19	DIODE	ISS119
D5	8-719-971-20	DIODE	ERC38-06
D6	8-719-973-95	DIODE	ERD09-15
D7	8-719-971-20	DIODE	ERC38-06
D9	8-719-911-19	DIODE	ISS119
D10	8-719-911-19	DIODE	ISS119
D11	8-719-911-19	DIODE	ISS119
D12	8-719-000-28	THYRISTOR	CR02AM-8
D13	8-719-812-41	DIODE	TLR124
D14	8-719-000-28	THYRISTOR	CR02AM-8
D15	8-719-812-41	DIODE	TLR124
D16	8-719-812-41	DIODE	TLR124
D17	8-719-000-28	THYRISTOR	CR02AM-8
D18	8-719-812-41	DIODE	TLR124
D19	8-719-911-19	DIODE	ISS119
D20	8-719-911-19	DIODE	ISS119
D21	8-719-110-31	DIODE	RD12ESB2
D22	8-719-109-85	DIODE	RD5.1ESB2
D23	8-719-911-19	DIODE	ISS119

IC

IC1	8-759-208-17	IC	TC4528BPHB
IC2	8-759-107-91	IC	UPC574J
IC3	8-759-990-82	IC	TL082CP
IC4	8-759-107-91	IC	UPC574J
IC5	8-759-103-93	IC	UPC393C
IC6	8-759-103-93	IC	UPC393C
IC7	8-759-990-82	IC	TL082CP

COIL

L1 1-424-167-11 COIL CHOKE HORIZONTAL RINGING

Ref.No	Part No.	Description	Remark
<b>TRANSISTOR</b>			
Q1	8-729-902-41	TRANSISTOR 2SC3318	
	4-391-515-01	SHEET, INSULATING (A) ; (Q1)	
	4-391-547-01	IC HOLDER ; (Q1)	
Q2	8-729-140-96	TRANSISTOR 2SD774-34	
Q3	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q4	8-729-140-96	TRANSISTOR 2SD774-34	
Q5	8-729-805-07	TRANSISTOR 2SD1887-CA	
	4-391-515-01	SHEET, INSULATING (A) ; (Q5)	
	4-391-547-01	IC HOLDER ; (Q5)	
Q6	8-729-140-96	TRANSISTOR 2SD774-34	
Q7	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q9	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q10	8-729-900-36	TRANSISTOR DTC124ES	
Q12	8-729-801-88	TRANSISTOR 2SA1221-E	
<b>RESISTOR</b>			
R1	1-249-401-11	CARBON 47 5% 1/4W	
R2	1-216-372-11	METAL OXIDE 1.8 5% 2W F	F
R3	1-216-427-00	METAL OXIDE 120 5% 1W F	F
R4	1-249-425-11	CARBON 4.7K 5% 1/4W	
R5	1-249-417-11	CARBON 1K 5% 1/4W	
R6	1-249-405-11	CARBON 100 5% 1/4W	
R7	1-249-429-11	CARBON 10K 5% 1/4W	
R8	1-249-425-11	CARBON 4.7K 5% 1/4W	
R9	1-249-419-11	CARBON 1.5K 5% 1/4W	
R10	1-249-411-11	CARBON 330 5% 1/4W	
R11	1-249-417-11	CARBON 1K 5% 1/4W	
R12	1-216-380-11	METAL OXIDE 8.2 5% 2W F	F
R13	1-249-393-11	CARBON 10 5% 1/4W	
R14	1-249-417-11	CARBON 1K 5% 1/4W	
R15	1-249-437-11	CARBON 47K 5% 1/4W	
R16	1-249-437-11	CARBON 47K 5% 1/4W	
R17	1-249-420-11	CARBON 1.8K 5% 1/4W	
R18	1-249-429-11	CARBON 10K 5% 1/4W	
R19	1-249-429-11	CARBON 10K 5% 1/4W	
R20	1-249-417-11	CARBON 1K 5% 1/4W	
R21	1-249-417-11	CARBON 1K 5% 1/4W	
R22	1-249-421-11	CARBON 2.2K 5% 1/4W	
R23	1-215-874-11	METAL OXIDE 6.8K 5% 1W F	F
R24	1-216-438-11	METAL OXIDE 8.2K 5% 1W F	F
R25	▲	METAL	1/6W
R26	▲	METAL	1/6W
R27	▲	METAL	1/6W
R28	1-215-445-00	METAL 10K 1% 1/6W	
R29	1-249-429-11	CARBON 10K 5% 1/4W	
R30	1-247-895-00	CARBON 470K 5% 1/4W	
R31	1-249-429-11	CARBON 10K 5% 1/4W	
R32	1-247-895-00	CARBON 470K 5% 1/4W	
R34	1-249-417-11	CARBON 1K 5% 1/4W	
R35	1-249-425-11	CARBON 4.7K 5% 1/4W	
R36	1-249-417-11	CARBON 1K 5% 1/4W	
R37	1-215-874-11	METAL OXIDE 6.8K 5% 1W F	F
R38	1-216-438-11	METAL OXIDE 8.2K 5% 1W F	F
R40	1-215-457-00	METAL 33K 1% 1/6W	
R41	▲	METAL	1/6W
R42	1-215-437-00	METAL 4.7K 1% 1/6W	
R43	1-215-485-00	METAL 470K 1% 1/6W	
R44	1-215-469-00	METAL 100K 1% 1/6W	
R45	1-249-429-11	CARBON 10K 5% 1/4W	
R46	1-249-429-11	CARBON 10K 5% 1/4W	
R47	1-215-421-00	METAL 1K 1% 1/6W	
R48	1-249-425-11	CARBON 4.7K 5% 1/4W	
R49	1-215-457-00	METAL 33K 1% 1/6W	
R50	▲	METAL	1/6W
R51	1-215-437-00	METAL 4.7K 1% 1/6W	

\* The components identified by **▲** in this manual should replacement be required, replace only with have been carefully factory-selected for each set in the value originally used. order to satisfy regulations regarding X-ray radiation.

**DDM-2801C/2802C  
DDM-2801C2/2802C2**

**P R**

Les composants identifiés par une trame et une marque **▲** sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

The components identified by shading and mark **▲** are critical for safety. Replace only with part number specified.

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
R52	1-215-469-00	METAL	100K 1% 1/6W	C4	1-136-060-00	FILM	0.047MF 5% 400V
R53	1-215-485-00	METAL	470K 1% 1/6W	C5	1-136-103-00	FILM	0.1MF 5% 200V
R54	1-249-429-11	CARBON	10K 5% 1/4W	C6	1-136-108-00	FILM	0.43MF 5% 200V
R55	1-249-429-11	CARBON	10K 5% 1/4W	C7	1-124-126-00	ELECT	47MF 20% 25V
R56	1-249-425-11	CARBON	4.7K 5% 1/4W	C8	1-102-074-00	CERAMIC	0.001MF 10% 50V
R57	1-215-459-00	METAL	39K 1% 1/6W	C9	1-102-973-00	CERAMIC	100PF 5% 50V
R58	1-215-449-00	METAL	15K 1% 1/6W	C10	1-124-798-11	ELECT	1MF 20% 160V
MR59 ▲		METAL	1/6W	C11	1-136-103-00	FILM	0.1MF 5% 200V
MR60 ▲		METAL	1/6W	C12	1-136-108-00	FILM	0.43MF 5% 200V
MR61 ▲		METAL	1/6W	C13	1-136-060-00	FILM	0.047MF 5% 400V
R62	1-249-437-11	CARBON	47K 5% 1/4W	C14	1-124-126-00	ELECT	47MF 20% 25V
R63	1-249-421-11	CARBON	22K 5% 1/4W	C15	1-129-716-00	FILM	0.015MF 10% 400V
R65	1-214-888-00	METAL	10K 1% 1/2W	C16	1-123-330-00	ELECT	22MF 20% 25V
R66	1-214-872-00	METAL	2.2K 1% 1/2W	C17	1-129-716-00	FILM	0.015MF 10% 400V
R67	1-214-888-00	METAL	10K 1% 1/2W	C18	1-123-330-00	ELECT	22MF 20% 25V
R68	1-214-872-00	METAL	2.2K 1% 1/2W	C19	1-129-716-00	FILM	0.015MF 10% 400V
R69	1-249-441-11	CARBON	100K 5% 1/4W	C20	1-123-330-00	ELECT	22MF 20% 25V
R70	1-247-883-00	CARBON	150K 5% 1/4W	C21	1-108-692-11	MYLAR	0.01MF 10% 200V
R72	1-215-445-00	METAL	10K 1% 1/6W	C22	1-123-330-00	ELECT	22MF 20% 25V
R73	1-215-445-00	METAL	10K 1% 1/6W	C23	1-108-692-11	MYLAR	0.01MF 10% 200V
R74	1-247-883-00	CARBON	150K 5% 1/4W	C24	1-123-330-00	ELECT	22MF 20% 25V
R75	1-247-883-00	CARBON	150K 5% 1/4W	C25	1-108-692-11	MYLAR	0.01MF 10% 200V
R77	1-247-895-00	CARBON	470K 5% 1/4W	C26	1-123-330-00	ELECT	22MF 20% 25V
R78	1-249-429-11	CARBON	10K 5% 1/4W	C27	1-130-471-00	MYLAR	0.001MF 5% 50V
R79	1-249-429-11	CARBON	10K 5% 1/4W	C28	1-102-978-00	CERAMIC	220PF 5% 50V
R80	1-249-429-11	CARBON	10K 5% 1/4W	C29	1-136-153-00	FILM	0.01MF 5% 50V
R81	1-249-429-11	CARBON	10K 5% 1/4W	C30	1-102-963-00	CERAMIC	33PF 5% 50V
R82	1-249-417-11	CARBON	1K 5% 1/4W	C31	1-102-973-00	CERAMIC	100PF 5% 50V
R85	1-249-429-11	CARBON	10K 5% 1/4W	C32	1-101-880-00	CERAMIC	47PF 5% 50V
R86	1-249-429-11	CARBON	10K 5% 1/4W	C33	1-136-161-00	FILM	0.047MF 5% 50V
R87	1-216-390-11	METAL OXIDE	1.2 5% 3W F	C34	1-124-126-00	ELECT	47MF 20% 25V
R88	1-249-437-11	CARBON	47K 5% 1/4W	C35	1-124-126-00	ELECT	47MF 20% 25V
R89	1-249-437-11	CARBON	47K 5% 1/4W	C36	1-136-103-00	FILM	0.1MF 5% 200V
R90	1-249-429-11	CARBON	10K 5% 1/4W	C37	1-136-108-00	FILM	0.43MF 5% 200V
R91	1-249-437-11	CARBON	47K 5% 1/4W	C38	1-126-103-11	ELECT	470MF 20% 16V
R92	1-215-421-00	METAL	1K 1% 1/6W	C39	1-124-808-51	ELECT	10MF 20% 200V
R93	1-215-465-00	METAL	68K 1% 1/6W	C40	1-102-110-00	CERAMIC	220PF 10% 50V
R94	1-215-465-00	METAL	68K 1% 1/6W	C43	1-101-880-00	CERAMIC	47PF 5% 50V
R95	1-249-409-11	CARBON	220 5% 1/4W	C44	1-124-126-00	ELECT	47MF 20% 25V
R96	1-247-887-00	CARBON	220K 5% 1/4W	C46	1-136-153-00	FILM	0.01MF 5% 50V
R97	1-249-409-11	CARBON	220 5% 1/4W	C47	1-124-126-00	ELECT	47MF 20% 25V
<u>VARIABLE RESISTOR</u>							
RV1	1-237-516-21	RES, ADJ, CERMET 2K		C49	1-124-126-00	ELECT	47MF 20% 25V
<u>TRANSFORMER</u>							
T1	1-437-164-11	HDT		C52	1-124-798-11	ELECT	1MF 20% 160V
T2	1-437-164-11	HDT		C53	1-136-161-00	FILM	0.047MF 5% 50V
*****							
R BOARD, COMPLETE							
*****							
4-029-923-01 SHEET, INSULATING (F)							
4-029-924-01 IC HOLDER (S)							
* 4-341-751-01 EYELET (EY1-EY4)							
4-391-517-01 SHEET, INSULATING (C)							
4-391-547-01 IC HOLDER							
4-391-550-01 SCREW, (M5X15) (A), LOCK							
<u>CAPACITOR</u>							
C1	1-102-074-00	CERAMIC	0.001MF 10% 50V	C61	1-126-365-51	ELECT	100MF 20% 100V
C2	1-102-973-00	CERAMIC	100PF 5% 50V	C62	1-126-365-51	ELECT	100MF 20% 100V
C3	1-124-798-11	ELECT	1MF 20% 160V	C63	1-130-048-00	FILM	220PF 5% 50V
*****							
C64							
C65							
C66							
C67							
C68							
C69							
C70							
C71							
C72							
C73							
C74							
C75							
C76							

\* The components identified by **■** in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

Ref.No	Part No.	Description	Remark			Ref.No	Part No.	Description	Remark			
C77	1-136-177-00	FLIM	1MF	5%	50V	L4	1-421-421-00	COIL CHOKE	100UH			
C78	1-136-153-00	FLIM	0.01MF	5%	50V							
<u>PLUG</u>												
CNR-1 *1-564-509-11	PLUG CONNECTOR 6P					Q1	8-729-891-02	TRANSISTOR	2SC2910			
CNR-2 *1-564-510-11	PLUG CONNECTOR 7P					Q2	8-729-891-02	TRANSISTOR	2SC2910			
CNR-3 *1-564-515-11	PLUG CONNECTOR 12P					Q3	8-729-216-42	TRANSISTOR	2SA1164			
CNR-4 *1-564-507-11	PLUG CONNECTOR 4P					Q4	8-729-802-78	TRANSISTOR	2SC3502			
CNR-5 *1-564-515-11	PLUG CONNECTOR 12P					Q5	8-729-802-78	TRANSISTOR	2SC3502			
CNR-6 *1-564-506-11	PLUG CONNECTOR 3P					Q6	8-729-804-35	TRANSISTOR	2SA1380			
<u>DIODE</u>												
D1	8-719-911-19	DIODE	ISS119			Q7	8-729-133-62	TRANSISTOR	2SC2336B-Q			
D2	8-719-911-19	DIODE	ISS119			Q8	8-729-133-62	TRANSISTOR	2SC2336B-Q			
D3	8-719-911-19	DIODE	ISS119			Q9	8-729-891-02	TRANSISTOR	2SC2910			
D4	8-719-911-19	DIODE	ISS119			Q10	8-729-891-02	TRANSISTOR	2SC2910			
D5	8-719-971-20	DIODE	ERC38-06			Q11	8-729-216-42	TRANSISTOR	2SA1164			
D6	8-719-109-85	DIODE	RD5.1ES-B2			Q12	8-729-802-78	TRANSISTOR	2SC3502			
D7	8-719-911-19	DIODE	ISS119			Q13	8-729-802-78	TRANSISTOR	2SC3502			
D8	8-719-971-20	DIODE	ERC38-06			Q14	8-729-804-35	TRANSISTOR	2SA1380			
D9	8-719-109-85	DIODE	RD5.1ES-B2			Q15	8-729-133-62	TRANSISTOR	2SC2336B-Q			
D10	8-719-911-19	DIODE	ISS119			Q16	8-729-133-62	TRANSISTOR	2SC2336B-Q			
D11	8-719-971-20	DIODE	ERC38-06			Q17	8-729-119-76	TRANSISTOR	2SA1175-HFE			
D12	8-719-109-85	DIODE	RD5.1ES-B2			Q18	8-729-900-36	TRANSISTOR	DTC124ES			
D13	8-719-911-19	DIODE	ISS119			Q19	8-729-266-83	TRANSISTOR	2SC2668			
D14	8-719-971-20	DIODE	ERC38-06			Q20	8-729-266-83	TRANSISTOR	2SC2668			
D15	8-719-109-85	DIODE	RD5.1ES-B2			Q21	8-729-216-42	TRANSISTOR	2SA1164			
D16	8-719-911-19	DIODE	ISS119			Q22	8-729-322-43	TRANSISTOR	2SC4046			
D17	8-719-971-20	DIODE	ERC38-06				DDM-2801C ; Serial No. 2,000,044 and higher					
D18	8-719-109-85	DIODE	RD5.1ES-B2				DDM-2802C ; Serial No. 2,000,021 and higher					
D19	8-719-911-19	DIODE	ISS119				DDM-2801C2 ; Serial No. 2,000,050 and higher					
D20	8-719-971-20	DIODE	ERC38-06				DDM-2802C2 ; Serial No. 2,000,013 and higher					
D21	8-719-109-85	DIODE	RD5.1ES-B2				Q22	8-729-697-92	TRANSISTOR	2SA979		
D22	8-719-812-41	DIODE	TLR124				DDM-2801C ; Serial No. 10,091~2,000,043					
D23	8-719-812-41	DIODE	TLR124				DDM-2802C ; Serial No. 10,001~2,000,020					
D24	8-719-812-41	DIODE	TLR124				DDM-2801C2 ; Serial No. 10,001~2,000,049					
D25	8-719-109-85	DIODE	RD5.1ES-B2				DDM-2802C2 ; Serial No. 10,001~2,000,012					
D26	8-719-911-19	DIODE	ISS119			Q23	8-729-802-78	TRANSISTOR	2SC3502			
D27	8-719-911-19	DIODE	ISS119			Q24	8-729-802-78	TRANSISTOR	2SC3502			
D28	8-719-911-19	DIODE	ISS119			Q25	8-729-804-35	TRANSISTOR	2SA1380			
D29	8-719-911-19	DIODE	ISS119			Q26	8-729-133-62	TRANSISTOR	2SC2336B-Q			
D30	8-719-911-19	DIODE	ISS119			Q27	8-729-133-62	TRANSISTOR	2SC2336B-Q			
D31	8-719-812-41	DIODE	TLR124			Q28	8-729-266-83	TRANSISTOR	2SC2668			
D32	8-719-000-28	THYRISTOR	CR02AM-8			Q29	8-729-808-73	TRANSISTOR	2SB1274SA-R			
D33	8-719-000-28	THYRISTOR	CR02AM-8				4-382-854-11	SCREW (M3X10), P, SW (+) (Q29)				
D35	8-719-911-19	DIODE	ISS119				4-875-726-00	SHEET, INSULATING (Q29)				
D36	8-719-911-19	DIODE	ISS119			Q31	8-729-105-73	TRANSISTOR	2SK523-L2			
D37	8-719-911-19	DIODE	ISS119			Q35	8-729-891-02	TRANSISTOR	2SC2910			
D38	8-719-911-19	DIODE	ISS119			Q36	8-729-891-02	TRANSISTOR	2SC2910			
D39	8-719-911-19	DIODE	ISS119			Q38	8-729-802-78	TRANSISTOR	2SC3502			
D40	8-719-911-19	DIODE	ISS119			Q39	8-729-802-78	TRANSISTOR	2SC3502			
D41	8-719-911-19	DIODE	ISS119			Q40	8-729-804-35	TRANSISTOR	2SA1380			
D42	8-719-110-17	DIODE	RD10ESB2			Q41	8-729-133-62	TRANSISTOR	2SC2336B-Q			
<u>IC</u>												
IC1	8-759-133-90	IC	UPC339C			Q42	8-729-133-62	TRANSISTOR	2SC2336B-Q			
IC2	8-759-109-82	IC	UPC814C			Q43	8-729-107-84	TRANSISTOR	2SC3623A-L			
IC3	8-759-109-82	IC	UPC814C			Q44	8-729-309-36	TRANSISTOR	2SA893A			
IC4	8-759-982-13	IC	RC7812FA			Q45	8-729-309-36	TRANSISTOR	2SA893A			
IC5	8-759-179-12	IC	UPC7912H			Q46	8-729-207-82	TRANSISTOR	2SC3421-Y			
<u>COIL</u>												
L1	1-421-421-00	COIL	CHOKE	100UH		Q47	8-729-207-89	TRANSISTOR	2SA1358-Y			
L2	1-421-421-00	COIL	CHOKE	100UH		Q48	8-729-301-82	TRANSISTOR	2SC3519-Y			
L3	1-421-421-00	COIL	CHOKE	100UH		Q49	8-729-301-86	TRANSISTOR	2SA1386-Y			
						Q50	8-729-107-84	TRANSISTOR	2SC3623A-L			
						Q51	8-729-309-36	TRANSISTOR	2SA893A			
						Q52	8-729-309-36	TRANSISTOR	2SA893A			
						Q53	8-729-207-82	TRANSISTOR	2SC3421-Y			
						Q54	8-729-207-82	TRANSISTOR	2SC3421-Y			
						Q55	8-729-207-89	TRANSISTOR	2SA1358-Y			
						Q56	8-729-301-82	TRANSISTOR	2SC3519-Y			
						Q57	8-729-301-86	TRANSISTOR	2SA1386-Y			
						Q58	8-729-207-82	TRANSISTOR	2SC3421-Y			

**DDM-2801C/2802C**  
**DDM-2801C2/2802C2**

**R**

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
<b>RESISTOR</b>							
R1	1-215-421-00	METAL	1K 1% 1/6W	R60	1-249-425-11	CARBON 4.7K 5% 1/4W	DDM-2801C ; Serial No. 10,091~2,000,043
R2	1-215-437-00	METAL	4.7K 1% 1/6W			DDM-2802C ; Serial No. 10,001~2,000,020	
R3	1-215-421-00	METAL	1K 1% 1/6W			DDM-2801C2 ; Serial No. 10,001~2,000,049	
R4	1-215-421-00	METAL	1K 1% 1/6W			DDM-2802C2 ; Serial No. 10,001~2,000,012	
R5	1-215-437-00	METAL	4.7K 1% 1/6W	R61	1-249-441-11	CARBON 100K 5% 1/4W	DDM-2801C ; Serial No. 2,000,044 and higher
						DDM-2802C ; Serial No. 2,000,021 and higher	
R6	1-249-402-11	CARBON	56 5% 1/4W			DDM-2801C2 ; Serial No. 2,000,050 and higher	
R7	1-216-431-11	METAL OXIDE	560 5% 1W F	R61	1-249-895-11	CARBON 470K 5% 1/4W	DDM-2802C2 ; Serial No. 2,000,013 and higher
R8	1-215-421-00	METAL	1K 1% 1/6W			DDM-2801C ; Serial No. 10,091~2,000,043	
R9	1-249-410-11	CARBON	270 5% 1/4W			DDM-2802C ; Serial No. 10,001~2,000,020	
R10	1-249-421-11	CARBON	2.2K 5% 1/4W			DDM-2801C2 ; Serial No. 10,001~2,000,049	
						DDM-2802C2 ; Serial No. 10,001~2,000,012	
R11	1-249-417-11	CARBON	1K 5% 1/4W	R62	1-249-433-11	CARBON 22K 5% 1/4W	DDM-2801C ; Serial No. 2,000,044 and higher
R12	1-249-417-11	CARBON	1K 5% 1/4W	R63	1-249-417-11	CARBON 1K 5% 1/4W	DDM-2802C ; Serial No. 2,000,021 and higher
R13	1-215-409-00	METAL	330 1% 1/6W			DDM-2801C2 ; Serial No. 2,000,050 and higher	
R14	1-249-402-11	CARBON	56 5% 1/4W			DDM-2802C2 ; Serial No. 2,000,013 and higher	
R15	1-216-463-00	METAL OXIDE	12K 5% 2W F	R63	1-249-425-11	CARBON 4.7K 5% 1/4W	DDM-2801C ; Serial No. 10,091~2,000,043
						DDM-2802C ; Serial No. 10,001~2,000,020	
R16	1-215-897-11	METAL OXIDE	6.8K 5% 2W F			DDM-2801C2 ; Serial No. 10,001~2,000,049	
R17	1-249-397-11	CARBON	22 5% 1/4W F	R64	1-249-441-11	CARBON 100K 5% 1/4W	DDM-2802C2 ; Serial No. 10,001~2,000,012
R18	1-249-421-11	CARBON	2.2K 5% 1/4W F			DDM-2801C ; Serial No. 2,000,044 and higher	
R19	1-215-445-00	METAL	10K 1% 1/6W			DDM-2802C ; Serial No. 2,000,021 and higher	
R20	1-215-425-00	METAL	1.5K 1% 1/6W			DDM-2801C2 ; Serial No. 2,000,050 and higher	
						DDM-2802C2 ; Serial No. 2,000,013 and higher	
R21	1-249-413-11	CARBON	470 5% 1/4W F	R64	1-247-895-11	CARBON 470K 5% 1/4W	DDM-2801C ; Serial No. 10,091~2,000,043
R22	1-249-405-11	CARBON	100 5% 1/4W			DDM-2802C ; Serial No. 10,001~2,000,020	
R23	1-249-405-11	CARBON	100 5% 1/4W			DDM-2801C2 ; Serial No. 10,001~2,000,049	
R24	1-217-481-00	FUSIBLE	10 5% 1W F			DDM-2802C2 ; Serial No. 10,001~2,000,012	
R25	1-217-481-00	FUSIBLE	10 5% 1W F	R65	1-249-433-11	CARBON 22K 5% 1/4W	DDM-2801C ; Serial No. 10,091~2,000,043
				R66	1-249-429-11	CARBON 10K 5% 1/4W	DDM-2802C ; Serial No. 10,001~2,000,020
R26	1-214-765-00	METAL	33K 1% 1/4W	R64	1-247-895-11	CARBON 470K 5% 1/4W	DDM-2801C2 ; Serial No. 10,001~2,000,049
R27	1-217-481-00	FUSIBLE	10 5% 1W F			DDM-2802C2 ; Serial No. 10,001~2,000,012	
R28	1-249-402-11	CARBON	56 5% 1/4W			DDM-2801C ; Serial No. 2,000,044 and higher	
R29	1-216-431-11	METAL OXIDE	560 5% 1W F			DDM-2802C ; Serial No. 2,000,021 and higher	
R30	1-249-417-11	CARBON	1K 5% 1/4W	R67	1-247-895-00	CARBON 470K 5% 1/4W	DDM-2801C2 ; Serial No. 2,000,050 and higher
				R68	1-215-445-00	METAL 10K 1% 1/6W	DDM-2802C2 ; Serial No. 2,000,013 and higher
R31	1-249-411-11	CARBON	330 5% 1/4W	R69	1-215-429-00	METAL 2.2K 1% 1/6W	DDM-2801C ; Serial No. 2,000,044 and higher
R32	1-249-417-11	CARBON	1K 5% 1/4W			DDM-2802C ; Serial No. 2,000,021 and higher	
R33	1-249-421-11	CARBON	2.2K 5% 1/4W			DDM-2801C2 ; Serial No. 2,000,050 and higher	
R34	1-249-417-11	CARBON	1K 5% 1/4W			DDM-2802C2 ; Serial No. 2,000,013 and higher	
R35	1-249-417-11	CARBON	1K 5% 1/4W	R69	1-215-431-00	METAL 2.7K 1% 1/4W	DDM-2801C ; Serial No. 2,000,044 and higher
						DDM-2802C ; Serial No. 2,000,021 and higher	
R36	1-249-402-11	CARBON	56 5% 1/4W			DDM-2801C2 ; Serial No. 2,000,050 and higher	
R37	1-216-463-00	METAL OXIDE	12K 5% 2W F			DDM-2802C2 ; Serial No. 2,000,013 and higher	
R38	1-215-897-11	METAL OXIDE	6.8K 5% 2W F			DDM-2801C ; Serial No. 10,091~2,000,043	
R39	1-249-397-11	CARBON	22 5% 1/4W F			DDM-2802C ; Serial No. 10,001~2,000,020	
R40	1-215-445-00	METAL	10K 1% 1/6W	R70	1-249-421-11	CARBON 2.2K 5% 1/4W	DDM-2801C2 ; Serial No. 10,001~2,000,049
						DDM-2802C2 ; Serial No. 10,001~2,000,012	
R41	1-215-425-00	METAL	1.5K 1% 1/6W	R70	1-249-421-11	CARBON 2.2K 5% 1/4W	DDM-2801C ; Serial No. 10,091~2,000,043
R42	1-249-421-11	CARBON	2.2K 5% 1/4W F			DDM-2802C ; Serial No. 10,001~2,000,020	
R43	1-249-413-11	CARBON	470 5% 1/4W F			DDM-2801C2 ; Serial No. 10,001~2,000,049	
R44	1-249-405-11	CARBON	100 5% 1/4W			DDM-2802C2 ; Serial No. 10,001~2,000,012	
R45	1-249-405-11	CARBON	100 5% 1/4W	R71	1-249-421-11	CARBON 2.2K 5% 1/4W	DDM-2801C ; Serial No. 10,091~2,000,043
				R72	1-249-421-11	CARBON 2.2K 5% 1/4W	DDM-2802C ; Serial No. 10,001~2,000,020
R46	1-217-481-00	FUSIBLE	10 5% 1W F	R73	1-249-421-11	CARBON 2.2K 5% 1/4W	DDM-2801C2 ; Serial No. 10,001~2,000,049
R47	1-217-481-00	FUSIBLE	10 5% 1W F	R74	1-249-423-11	CARBON 3.3K 5% 1/4W	DDM-2802C2 ; Serial No. 10,001~2,000,012
R48	1-214-765-00	METAL	33K 1% 1/4W	R75	1-249-429-11	CARBON 10K 5% 1/4W	DDM-2801C ; Serial No. 2,000,044 and higher
R49	1-217-481-00	FUSIBLE	10 5% 1W F			DDM-2802C ; Serial No. 2,000,021 and higher	
R50	1-249-433-11	CARBON	22K 5% 1/4W	R76	1-249-421-11	CARBON 2.2K 5% 1/4W	DDM-2801C2 ; Serial No. 2,000,050 and higher
				R77	1-215-441-00	METAL 6.8K 1% 1/6W	DDM-2802C2 ; Serial No. 2,000,013 and higher
R51	1-249-429-11	CARBON	10K 5% 1/4W	R78	1-215-445-00	METAL 10K 1% 1/6W	DDM-2801C ; Serial No. 10,091~2,000,043
R52	1-247-895-00	CARBON	470K 5% 1/4W	R79	1-249-441-11	CARBON 100K 5% 1/4W	DDM-2802C ; Serial No. 10,001~2,000,020
R53	1-249-433-11	CARBON	22K 5% 1/4W	R80	1-249-421-11	CARBON 2.2K 5% 1/4W	DDM-2801C2 ; Serial No. 2,000,050 and higher
R54	1-249-429-11	CARBON	10K 5% 1/4W			DDM-2802C2 ; Serial No. 2,000,013 and higher	
R55	1-247-895-00	CARBON	470K 5% 1/4W	R81	1-249-425-11	CARBON 4.7K 5% 1/4W	DDM-2801C ; Serial No. 10,091~2,000,043
				R82	1-247-752-11	CARBON 1K 5% 1/2W	DDM-2802C ; Serial No. 10,001~2,000,020
R56	1-249-433-11	CARBON	22K 5% 1/4W	R83	1-249-421-11	CARBON 2.2K 5% 1/4W	DDM-2801C2 ; Serial No. 2,000,050 and higher
R57	1-249-429-11	CARBON	10K 5% 1/4W	R84	1-249-417-11	CARBON 1K 5% 1/4W	DDM-2802C2 ; Serial No. 2,000,013 and higher
R58	1-247-895-00	CARBON	470K 5% 1/4W	R85	1-249-417-11	CARBON 1K 5% 1/4W	DDM-2801C ; Serial No. 10,091~2,000,043
R59	1-249-433-11	CARBON	22K 5% 1/4W			DDM-2802C ; Serial No. 10,001~2,000,020	
R60	1-249-417-11	CARBON	1K 5% 1/4W	R86	1-249-421-11	CARBON 2.2K 5% 1/4W	DDM-2801C2 ; Serial No. 2,000,050 and higher
				R87	1-249-417-11	CARBON 1K 5% 1/4W	DDM-2802C2 ; Serial No. 2,000,013 and higher
				R88	1-249-417-11	CARBON 1K 5% 1/4W	DDM-2801C ; Serial No. 10,091~2,000,043
				R89	1-249-421-11	CARBON 2.2K 5% 1/4W	DDM-2802C ; Serial No. 10,001~2,000,020
				R90	1-249-421-11	CARBON 2.2K 5% 1/4W	DDM-2801C2 ; Serial No. 2,000,050 and higher

DDM-2801C/2802C  
DDM-2801C2/2802C2

R

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
R91	1-249-427-11	CARBON	6.8K 5% 1/4W	R138	1-215-441-00	METAL	6.8K 1% 1/6W
R92	1-215-437-00	METAL	4.7K 1% 1/6W	R139	1-249-402-11	CARBON	56 5% 1/4W
R93	1-215-437-00	METAL	4.7K 1% 1/6W	R140	1-216-431-11	METAL OXIDE	560 5% 1W F
R94	1-249-429-11	CARBON	10K 5% 1/4W	R141	1-249-417-11	CARBON	1K 5% 1/4W
R95	1-216-431-11	METAL OXIDE	560 5% 1W F	R143	1-249-417-11	CARBON	1K 5% 1/4W
		DDM-2801C ; Serial No. 2,000,044 and higher		R147	1-215-896-00	METAL OXIDE	4.7K 5% 2W F
		DDM-2802C ; Serial No. 2,000,021 and higher		R148	1-215-896-00	METAL OXIDE	4.7K 5% 2W F
		DDM-2801C2 ; Serial No. 2,000,050 and higher		R149	1-249-397-11	CARBON	22 5% 1/4W F
		DDM-2802C2 ; Serial No. 2,000,013 and higher		R150	1-249-402-11	CARBON	56 5% 1/4W
R95	1-249-417-11	CARBON	1K 5% 1/4W	R151	1-249-421-11	CARBON	2.2K 5% 1/4W F
		DDM-2801C ; Serial No. 10,091~2,000,043		R152	1-215-445-00	METAL	10K 1% 1/6W
		DDM-2802C ; Serial No. 10,001~2,000,020		R153	1-215-419-00	METAL	820 1% 1/6W
		DDM-2801C2 ; Serial No. 10,001~2,000,049		R154	1-249-413-11	CARBON	470 5% 1/4W F
R96	1-249-417-11	CARBON	1K 5% 1/4W	R155	1-249-405-11	CARBON	100 5% 1/4W
R97	1-215-429-00	METAL	2.2K 1% 1/6W	R156	1-249-405-11	CARBON	100 5% 1/4W
R98	1-249-402-11	CARBON	56 5% 1/4W	R157	1-217-481-00	FUSIBLE	10 5% 1W F
		DDM-2801C ; Serial No. 2,000,044 and higher		R158	1-217-481-00	FUSIBLE	10 5% 1W F
		DDM-2802C ; Serial No. 2,000,021 and higher		R159	1-214-769-00	METAL	47K 1% 1/4W
		DDM-2801C2 ; Serial No. 2,000,050 and higher		R160	1-213-056-11	FUSIBLE	6.8 5% 1W F
R98	1-249-399-11	CARBON	33 5% 1/4W	R162	1-249-441-11	CARBON	100K 5% 1/4W
		DDM-2801C ; Serial No. 10,091~2,000,043		R163	1-249-433-11	CARBON	22K 5% 1/4W
		DDM-2802C ; Serial No. 10,001~2,000,020		R164	1-215-437-00	METAL	4.7K 1% 1/6W
		DDM-2801C2 ; Serial No. 10,001~2,000,049		R165	1-249-429-11	CARBON	10K 5% 1/4W
		DDM-2802C2 ; Serial No. 10,001~2,000,012		R166	1-247-764-11	CARBON	10K 5% 1/2W
R99	1-215-443-00	METAL	8.2K 1% 1/6W	R167	1-249-417-11	CARBON	1K 5% 1/4W
		DDM-2801C ; Serial No. 2,000,044 and higher		R168	1-249-417-11	CARBON	1K 5% 1/4W
		DDM-2802C ; Serial No. 2,000,021 and higher		R169	1-216-461-00	METAL OXIDE	5.6K 5% 2W F
		DDM-2801C2 ; Serial No. 2,000,050 and higher		R170	1-249-393-11	CARBON	10 5% 1/4W F
R99	1-249-413-11	CARBON	470 5% 1/4W	R171	1-249-405-11	CARBON	100 5% 1/4W
		DDM-2801C ; Serial No. 10,091~2,000,043		R172	1-249-421-11	CARBON	2.2K 5% 1/4W
R100	1-215-899-11	METAL OXIDE	15K 5% 2W F	R173	1-249-421-11	CARBON	2.2K 5% 1/4W
R101	1-215-899-11	METAL OXIDE	15K 5% 2W F	R174	1-249-402-11	CARBON	56 5% 1/4W F
R102	1-249-413-11	CARBON	470 5% 1/4W F	R175	1-249-405-11	CARBON	100 5% 1/4W
R103	1-249-405-11	CARBON	100 5% 1/4W	R176	1-249-405-11	CARBON	100 5% 1/4W
R104	1-249-405-11	CARBON	100 5% 1/4W	R177	1-217-465-00	FUSIBLE	0.47 10% 1W F
R105	1-217-481-00	FUSIBLE	10 5% 1W F	R178	1-217-465-00	FUSIBLE	0.47 10% 1W F
R106	1-217-481-00	FUSIBLE	10 5% 1W F	R179	1-215-911-11	METAL OXIDE	100 5% 3W F
R107	1-215-453-00	METAL	22K 1% 1/6W	R180	1-216-389-11	METAL OXIDE	1 5% 3W F
R108	1-217-481-00	FUSIBLE	10 5% 1W F	R181	1-215-429-00	METAL	2.2K 1% 1/6W
R109	1-249-421-11	CARBON	2.2K 5% 1/4W	R182	1-249-433-11	CARBON	22K 5% 1/4W
R110	1-249-421-11	CARBON	2.2K 5% 1/4W	R183	1-215-437-00	METAL	4.7K 1% 1/6W
R111	1-249-421-11	CARBON	2.2K 5% 1/4W	R184	1-215-445-00	METAL	10K 1% 1/6W
R112	1-249-417-11	CARBON	1K 5% 1/4W	R185	1-247-764-11	CARBON	10K 5% 1/2W
R113	1-215-445-00	METAL	10K 1% 1/6W	R186	1-249-417-11	CARBON	1K 5% 1/4W
R114	1-215-429-00	METAL	2.2K 1% 1/6W	R187	1-249-417-11	CARBON	1K 5% 1/4W
R115	1-249-425-11	CARBON	4.7K 5% 1/4W	R188	1-216-461-00	METAL OXIDE	5.6K 5% 2W F
R116	1-249-425-11	CARBON	4.7K 5% 1/4W	R189	1-249-393-11	CARBON	10 5% 1/4W F
R117	1-249-425-11	CARBON	4.7K 5% 1/4W	R190	1-249-405-11	CARBON	100 5% 1/4W
R118	1-215-453-00	METAL	22K 1% 1/6W	R191	1-249-405-11	CARBON	100 5% 1/4W
R120	1-215-445-00	METAL	10K 1% 1/6W	R192	1-249-421-11	CARBON	2.2K 5% 1/4W
R121	1-215-445-00	METAL	10K 1% 1/6W	R193	1-249-421-11	CARBON	2.2K 5% 1/4W
R122	1-249-470-11	CARBON	0.47 5% 1/2W F	R194	1-249-402-11	CARBON	56 5% 1/4W F
R123	1-249-429-11	CARBON	10K 5% 1/4W	R195	1-249-405-11	CARBON	100 5% 1/4W
R124	1-249-417-11	CARBON	1K 5% 1/4W	R196	1-249-405-11	CARBON	100 5% 1/4W
R125	1-247-887-00	CARBON	220K 5% 1/4W	R197	1-217-465-00	FUSIBLE	0.47 10% 1W F
R126	1-249-421-11	CARBON	2.2K 5% 1/4W	R198	1-217-465-00	FUSIBLE	0.47 10% 1W F
R127	1-249-421-11	CARBON	2.2K 5% 1/4W	R199	1-215-911-11	METAL OXIDE	100 5% 3W F
R128	1-249-421-11	CARBON	2.2K 5% 1/4W	R200	1-216-389-11	METAL OXIDE	1 5% 3W F
R129	1-247-903-00	CARBON	1M 5% 1/4W	R201	1-215-429-00	METAL	2.2K 1% 1/6W
R130	1-247-895-00	CARBON	470K 5% 1/4W	R202	1-249-393-11	CARBON	10 5% 1/4W
R131	1-249-405-11	CARBON	100 5% 1/4W	R203	1-249-405-11	CARBON	100 5% 1/4W
R132	1-249-401-11	CARBON	47 5% 1/4W	R205	1-249-417-11	CARBON	1K 5% 1/4W
R136	1-249-417-11	CARBON	1K 5% 1/4W	R206	1-249-417-11	CARBON	1K 5% 1/4W
R137	1-249-417-11	CARBON	1K 5% 1/4W	R207	1-249-397-11	CARBON	22 5% 1/4W F
				R208	1-215-445-00	METAL	10K 1% 1/6W
				R209	1-215-457-00	METAL	33K 1% 1/6W

**DDM-2801C/2802C  
DDM-2801C2/2802C2**

**R T F**

Les composants identifiés par une trame et une marque **A** sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

The components identified by shading and mark **A** are critical for safety. Replace only with part number specified.

Ref.No	Part No.	Description	Remark
R210	1-249-428-11	CARBON	8.2K 5% 1/4W
R215	1-247-903-00	CARBON	1M 5% 1/4W

**VARIABLE RESISTOR**

RV1 1-237-504-21 RES, ADJ, CERMET 20K

\*\*\*\*\*

**T BOARD, COMPLETE**

\*\*\*\*\*

**CAPACITOR**

C1	1-124-261-00	ELECT	10MF	20%	50V
C2	1-124-261-00	ELECT	10MF	20%	50V
C3	1-124-261-00	ELECT	10MF	20%	50V
C4	1-124-261-00	ELECT	10MF	20%	50V

**PLUG**

CNT-1 *1-564-512-11	PLUG CONNECTOR 9P
CNT-2 *1-564-509-11	PLUG CONNECTOR 6P
CNT-3 *1-564-510-11	PLUG CONNECTOR 7P
CNT-4 *1-564-509-11	PLUG CONNECTOR 6P
CNT-5 *1-564-509-11	PLUG CONNECTOR 6P
CNT-6 *1-564-507-11	PLUG CONNECTOR 4P
CNT-7 *1-564-507-11	PLUG CONNECTOR 4P
CNT-8 *1-564-515-11	PLUG CONNECTOR 12P
CNT-9 *1-564-511-11	PLUG CONNECTOR 8P
CNT-10 *1-564-515-11	PLUG CONNECTOR 12P
CNT-11 *1-564-512-11	PLUG CONNECTOR 9P
CNT-12 *1-564-514-11	PLUG CONNECTOR 11P
CNT-13 *1-564-513-11	PLUG CONNECTOR 10P
CNT-14 *1-564-505-11	PLUG CONNECTOR 2P

**DIODE**

D1	8-719-911-19	DIODE	ISS119
D2	8-719-911-19	DIODE	ISS119
D3	8-719-911-19	DIODE	ISS119
D4	8-719-911-19	DIODE	ISS119
D5	8-719-109-85	DIODE	RD5.1ESB2

D6	8-719-812-41	DIODE	TLR124
D7	8-719-812-41	DIODE	TLR124
D8	8-719-812-41	DIODE	TLR124
D9	8-719-812-41	DIODE	TLR124
D10	8-719-812-41	DIODE	TLR124

D11	8-719-812-41	DIODE	TLR124
D12	8-719-812-41	DIODE	TLR124
D13	8-719-812-43	DIODE	TLG124A
D14	8-719-812-43	DIODE	TLG124A
D15	8-719-812-41	DIODE	TLR124

D16	8-719-812-41	DIODE	TLR124
D17	8-719-812-41	DIODE	TLR124
D18	8-719-812-41	DIODE	TLR124
D19	8-719-812-41	DIODE	TLR124
D20	8-719-812-41	DIODE	TLR124

D21	8-719-812-41	DIODE	TLR124
D22	8-719-812-41	DIODE	TLR124
D23	8-719-911-19	DIODE	ISS119
D24	8-719-911-19	DIODE	ISS119
D25	8-719-911-19	DIODE	ISS119

D26	8-719-911-19	DIODE	ISS119
D27	8-719-911-19	DIODE	ISS119
D28	8-719-911-19	DIODE	ISS119
D29	8-719-911-19	DIODE	ISS119
D30	8-719-911-19	DIODE	ISS119

D31	8-719-911-19	DIODE	ISS119
-----	--------------	-------	--------

Ref.No	Part No.	Description	Remark
D32	8-719-911-19	DIODE ISS119	

**IC**

IC1	8-759-133-90	IC UPC339C
IC2	8-759-133-90	IC UPC339C
IC3	8-759-202-98	IC TC74HC166P

**TRANSISTOR**

Q1	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q2	8-729-900-36	TRANSISTOR DTC124ES

**RESISTOR**

R1	1-215-445-00	METAL	10K 1% 1/6W
R2	1-215-431-00	METAL	2.7K 1% 1/6W
R3	1-215-445-00	METAL	10K 1% 1/6W
R6	1-247-883-00	CARBON	150K 5% 1/4W
R7	1-247-883-00	CARBON	150K 5% 1/4W
R8	1-249-427-11	CARBON	6.8K 5% 1/4W
R9	1-247-881-00	CARBON	120K 5% 1/4W
R10	1-247-881-00	CARBON	120K 5% 1/4W
R11	1-249-428-11	CARBON	8.2K 5% 1/4W
R12	1-249-439-11	CARBON	68K 5% 1/4W
R13	1-249-439-11	CARBON	68K 5% 1/4W
R14	1-249-430-11	CARBON	12K 5% 1/4W
R15	1-249-437-11	CARBON	47K 5% 1/4W
R16	1-249-427-11	CARBON	6.8K 5% 1/4W
R18	1-249-434-11	CARBON	27K 5% 1/4W
R19	1-249-428-11	CARBON	8.2K 5% 1/4W
R20	1-249-427-11	CARBON	6.8K 5% 1/4W
R21	1-249-423-11	CARBON	3.3K 5% 1/4W
R22	1-215-429-00	METAL	2.2K 1% 1/6W
R23	1-249-421-11	CARBON	2.2K 5% 1/4W
R24	1-249-417-11	CARBON	1K 5% 1/4W
R29	1-249-441-11	CARBON	100K 5% 1/4W
R30	1-249-421-11	CARBON	2.2K 5% 1/4W
R31	1-249-421-11	CARBON	2.2K 5% 1/4W
R32	1-249-429-11	CARBON	10K 5% 1/4W
R33	1-249-417-11	CARBON	1K 5% 1/4W
R34	1-249-417-11	CARBON	1K 5% 1/4W
R35	1-249-417-11	CARBON	1K 5% 1/4W
R36	1-249-417-11	CARBON	1K 5% 1/4W
R37	1-249-417-11	CARBON	1K 5% 1/4W
R38	1-249-417-11	CARBON	1K 5% 1/4W
R39	1-249-417-11	CARBON	1K 5% 1/4W
R40	1-249-417-11	CARBON	1K 5% 1/4W
R41	1-249-417-11	CARBON	1K 5% 1/4W
R42	1-249-417-11	CARBON	1K 5% 1/4W
R43	1-249-417-11	CARBON	1K 5% 1/4W
R44	1-249-417-11	CARBON	1K 5% 1/4W
R45	1-249-417-11	CARBON	1K 5% 1/4W
R46	1-214-921-00	CARBON	220K 5% 1/2W

C1	Δ.1-136-527-12	FILM	0.47MF 20% 250V
C2	Δ.1-136-185-12	FILM	0.22MF 20% 250V
C3	Δ.1-161-953-52	CERAMIC	0.0047MF 20% 400V

**DDM-2801C/2802C  
DDM-2801C2/2802C2**

**F H**

Les composants identifiés par une flèche et une marque **A** sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

The components identified by shading and mark **A** are critical for safety. Replace only with part number specified.

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
C4	△ 1-161-953-52	CERAMIC	0.0047MF 20% 400V	R6	1-215-927-00	METAL OXIDE	47K 5% 3W F
C5	△ 1-161-953-52	CERAMIC	0.0047MF 20% 400V	R7	1-202-838-00	SOLID	100K 10% 1/2W
C6	△ 1-161-953-52	CERAMIC	0.0047MF 20% 400V	R8	1-215-865-11	METAL OXIDE	220 5% 1W F
C7	△ 1-161-953-52	CERAMIC	0.0047MF 20% 400V	R9	1-215-863-11	METAL OXIDE	100 5% 1W F
C8	△ 1-161-953-52	CERAMIC	0.0047MF 20% 400V	R10	1-247-708-11	CARBON	470 5% 1/4W
C9	1-162-599-12	CERAMIC	0.0047MF 20% 400V	R12	1-249-419-11	CARBON	1.5K 5% 1/4W
C10	1-162-599-12	CERAMIC	0.0047MF 20% 400V	R13	1-249-429-11	CARBON	10K 5% 1/4W
C11	1-125-611-11	ELECT	1000MF 20% 250V	R15	1-249-417-11	CARBON	1K 5% 1/4W
C12	1-125-611-11	ELECT	1000MF 20% 250V	R16	1-249-425-11	CARBON	4.7K 5% 1/4W
C13	1-125-611-11	ELECT	1000MF 20% 250V	R18	1-249-429-11	CARBON	10K 5% 1/4W
C14	1-125-611-11	ELECT	1000MF 20% 250V	R19	1-249-429-11	CARBON	10K 5% 1/4W
C17	1-129-749-11	FILM	0.068MF 10% 400V	R20	1-247-750-11	CARBON	680 5% 1/2W
C19	1-162-318-11	CERAMIC	0.001MF 10% 500V	R21	1-216-473-11	METAL OXIDE	56 5% 3W F
C20	1-124-571-00	ELECT	270MF 20% 25V	R22	1-249-425-11	CARBON	4.7K 5% 1/4W
C21	1-126-630-11	ELECT	82MF 20% 25V	R23	1-249-425-11	CARBON	4.7K 5% 1/4W
C23	1-123-875-11	ELECT	10MF 20% 50V	R24	1-249-409-11	CARBON	220 5% 1/4W
C24	1-162-318-11	CERAMIC	0.001MF 10% 500V				
C25	1-124-520-11	ELECT	3300MF 20% 10V				
C26	1-124-567-00	ELECT	1200MF 20% 10V				
C29	1-126-630-11	ELECT	82MF 20% 25V				
C37	1-126-630-11	ELECT	82MF 20% 25V				
C40	1-162-599-12	CERAMIC	0.0047MF 20% 400V				
C41	1-162-599-12	CERAMIC	0.0047MF 20% 400V				
C42	1-162-599-12	CERAMIC	0.0047MF 20% 400V				
C43	1-162-599-12	CERAMIC	0.0047MF 20% 400V				
<u>PLUG</u>							
CNF-1 *1-506-347-21 PIN, CONNECTOR 4P							
CNF-2 *1-506-348-XX CONNECTOR PIN 3P							
CNF-5 *1-508-784-00 PIN, CONNECTOR (5MM PITCH) 1P							
<u>DIODE</u>							
D1	8-719-500-16	DIODE D5SB60					
	4-381-906-01	SPRING (F), (D1)					
	4-391-515-01	SHEET (A), INSULATOR, (D1)					
D2	8-719-300-33	DIODE RU-3AM					
D3	8-719-911-19	DIODE ISS119					
D4	8-719-110-41	DIODE RD15ESB2					
D5	8-719-000-28	THYRISTOR CR02AM-8					
D6	8-719-981-00	DIODE ERC81-004					
D7	8-719-911-19	DIODE ISS119					
<u>IC</u>							
IC1	8-749-920-45	IC MA1050					
	4-381-906-01	SPRING (F), (IC1)					
	4-391-515-01	SHEET (A), INSULATOR, (IC1)					
IC2	8-719-939-00	DIODE PC111S					
IC3	8-749-920-44	IC SE-012N					
IC4	8-749-920-43	IC SI-3050CA					
	4-875-726-00	SHEET, INSULATING, (IC4)					
	4-363-146-00	HEAT SINK, V. OUT, (IC4)					
	4-382-854-11	SCREW (M3X10), P, SW (+), (IC4)					
<u>COIL</u>							
L1	1-459-406-00	COIL (WITH CORE)	COIL	32UH			
<u>TRANSISTOR</u>							
Q1	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q2	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q3	8-729-119-76	TRANSISTOR 2SA1175-HFE					
Q4	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q5	8-729-119-78	TRANSISTOR 2SC2785-HFE					
<u>RESISTOR</u>							
R1	△ .1-202-719-91	SOLID	1M 10% 1/2W				
R2	1-215-927-00	METAL OXIDE	47K 5% 3W F				
R3	1-215-927-00	METAL OXIDE	47K 5% 3W F				
<u>PLUG</u>							
CN1	1-563-794-11	CONNECTOR, D-SUB (RECEPTACLE) 15P					
CN2	*1-563-732-11	SOCKET, ROUND TYPE 8P					
CNH-1	*1-564-514-11	CONNECTOR PLUG 11P					
CNH-2	*1-564-507-11	CONNECTOR PLUG 4P					
<u>VARISTOR</u>							
VA1	△ 1-807-180-11	VARISTOR SNR-14A300K					
*****							
<u>H BOARD</u>							
*****							
<u>PLUG</u>							
CN1	1-563-794-11	CONNECTOR, D-SUB (RECEPTACLE) 15P					
CN2	*1-563-732-11	SOCKET, ROUND TYPE 8P					
CNH-1	*1-564-514-11	CONNECTOR PLUG 11P					
CNH-2	*1-564-507-11	CONNECTOR PLUG 4P					
<u>DIODE</u>							
D1	8-719-109-85	DIODE RD5.1ESB2					
D2	8-719-109-85	DIODE RD5.1ESB2					
D3	8-719-109-85	DIODE RD5.1ESB2					
D4	8-719-109-85	DIODE RD5.1ESB2					
D5	8-719-109-85	DIODE RD5.1ESB2					
			DDM-2801 only ; Serial No. 10,031 and higher				
<u>RESISTOR</u>							
R1	1-249-405-11	CARBON	100 5% 1/4W				
R2	1-249-405-11	CARBON	100 5% 1/4W				
R3	1-249-405-11	CARBON	100 5% 1/4W				
R4	1-249-405-11	CARBON	100 5% 1/4W				
R5	1-249-405-11	CARBON	100 5% 1/4W				
			DDM-2801C only ; Serial No. 10,031 and higher				
*****							

**DDM-2801C/2802C**  
**DDM-2801C2/2802C2**

**L** **G**

Ref.No	Part No.	Description	Remark	Ref.No	Part No.	Description	Remark
<u>L BOARD</u>							
*****							
<u>PLUG</u>							
CNL-1 * 1-564-507-11 CONNECTOR PLUG 4P							
<u>DIODE</u>							
D1	8-719-812-43	DIODE TLG124A		C41	1-162-318-11	CERAMIC	0.001MF 10% 500V
	4-374-906-01	LED HOLDER (TV/V), (D1)		C42	1-162-318-11	CERAMIC	0.001MF 10% 500V
D2	8-719-812-41	DIODE TLR124		C43	1-162-318-11	CERAMIC	0.001MF 10% 500V
	4-374-906-01	LED HOLDER (TV/V), (D2)		C44	1-162-318-11	CERAMIC	0.001MF 10% 500V
<u>RESISTOR</u>							
R1	1-249-421-11	CARBON	2.2K 5%	C45	1-162-318-11	CERAMIC	0.001MF 10% 500V
R2	1-249-421-11	CARBON	2.2K 5%	C46	1-162-318-11	CERAMIC	0.001MF 10% 500V
*****							
<u>G BOARD</u>							
*****							
* 3-673-676-41 RAIL, GUIDE, PC BOARD							
* 4-341-751-01 EYELET (EY3-EY8)							
* 4-341-752-01 EYELET (EY1,EY2)							
4-391-515-01 SHEET, (A), INSULATOR							
4-391-518-01 SHEET, (D), INSULATOR							
<u>DIODE</u>							
D1	8-719-970-87	DIODE ERA38-06		C56	1-164-143-11	CERAMIC	0.001MF 10% 1KV
D2	8-719-970-87	DIODE ERA38-06		C57	1-164-143-11	CERAMIC	0.001MF 10% 1KV
D3	8-719-110-39	DIODE RD15ESB1		C58	1-164-143-11	CERAMIC	0.001MF 10% 1KV
D4	8-719-110-39	DIODE RD15ESB1		C59	1-164-143-11	CERAMIC	0.001MF 10% 1KV
D5	8-719-110-39	DIODE RD15ESB1		C60	1-164-143-11	CERAMIC	0.001MF 10% 1KV
D6	8-719-110-39	DIODE RD15ESB1		C61	1-164-143-11	CERAMIC	0.001MF 10% 1KV
D7	8-719-911-19	DIODE ISS119		C62	1-136-619-11	FILM	0.001MF 3% 2KV
D8	8-719-911-19	DIODE ISS119		C66	1-106-383-00	MYLAR	0.047MF 10% 100V
D9	8-719-500-41	DIODE D8LCA20		C67	1-108-427-51	MYLAR	0.033MF 10% 200V
<u>DIODE</u>							
D1	8-719-970-87	DIODE ERA38-06		D12	8-719-981-00	DIODE ERC81-004	
D2	8-719-970-87	DIODE ERA38-06		D13	8-719-500-41	DIODE D8LCA20	
D3	8-719-110-39	DIODE RD15ESB1		D14	4-875-726-00	SHEET, INSULATING, (D13)	
D4	8-719-110-39	DIODE RD15ESB1		D15	4-382-854-11	SCREW (M3X10) P, SW (+), (D13)	
D5	8-719-110-39	DIODE RD15ESB1		D16	8-719-500-42	DIODE D8LCA20R	
D6	8-719-110-39	DIODE RD15ESB1		D17	4-875-726-00	SHEET, INSULATING, (D14)	
D7	8-719-911-19	DIODE ISS119		D18	4-382-854-11	SCREW (M3X10) P, SW (+), (D14)	
D8	8-719-911-19	DIODE ISS119		D19	8-719-500-42	DIODE D8LCA20R	
D9	8-719-500-41	DIODE D8LCA20		D20	4-875-726-00	SHEET, INSULATING, (D15)	
D10	8-719-500-42	DIODE D8LCA20R		D21	4-382-854-11	SCREW (M3X10) P, SW (+), (D15)	
D11	8-719-904-01	SPRING (C), (D9)		D22	8-719-500-41	DIODE D8LCA20	
D12	8-719-500-42	DIODE D8LCA20R		D23	4-381-904-01	SPRING (C), (D22)	
D13	8-719-500-41	DIODE D8LCA20		D24	8-719-500-42	DIODE D8LCA20R	
D14	4-875-726-00	SHEET, INSULATING, (D13)		D25	4-382-854-11	SCREW (M3X10) P, SW (+), (D16)	
D15	4-382-854-11	SCREW (M3X10) P, SW (+), (D13)		D26	8-719-500-42	DIODE D8LCA20	
D16	8-719-500-42	DIODE D8LCA20R		D27	4-875-726-00	SHEET, INSULATING, (D14)	
D17	8-719-500-41	DIODE D8LCA20		D28	4-382-854-11	SCREW (M3X10) P, SW (+), (D14)	
D18	8-719-500-41	DIODE D8LCA20		D29	8-719-500-42	DIODE D8LCA20R	
D19	8-719-500-42	DIODE D8LCA20R		D30	4-381-904-01	SPRING (C), (D20)	
D20	8-719-500-42	DIODE D8LCA20R		D31	8-719-500-41	DIODE D8LCA20	
D21	4-381-904-01	SPRING (C), (D20)		D32	4-381-904-01	SPRING (C), (D21)	
D22	8-719-500-41	DIODE D8LCA20		D33	8-719-300-33	DIODE RU-3AM	
D23	8-719-500-42	DIODE D8LCA20R		D34	8-719-500-41	DIODE D8LCA20	
D24	4-381-904-01	SPRING (C), (D22)		D35	8-719-500-42	DIODE D8LCA20R	
D25	8-719-500-42	DIODE D8LCA20R		D36	4-381-904-01	SPRING (C), (D20)	
D26	4-381-904-01	SPRING (C), (D21)		D37	8-719-500-41	DIODE D8LCA20	
D27	4-381-904-01	SPRING (C), (D21)		D38	4-381-904-01	SPRING (C), (D23)	
D28	8-719-300-33	DIODE RU-3AM		D39	8-719-484-00	COIL (WITH CORE)	35UH
D29	8-719-500-41	DIODE D8LCA20		D40	1-459-484-00	COIL (WITH CORE)	35UH
D30	8-719-500-42	DIODE D8LCA20R		D41	8-719-484-00	COIL (WITH CORE)	32UH
D31	4-381-904-01	SPRING (C), (D20)		D42	1-459-406-00	COIL (WITH CORE)	32UH
D32	8-719-500-42	DIODE D8LCA20R		D43	1-459-406-00	COIL (WITH CORE)	32UH
D33	8-719-484-00	COIL (WITH CORE)		D44	1-459-406-00	COIL (WITH CORE)	32UH
D34	8-719-484-00	COIL (WITH CORE)		D45	1-459-406-00	COIL (WITH CORE)	32UH
D35	8-719-484-00	COIL (WITH CORE)		D46	1-459-406-00	COIL (WITH CORE)	32UH
D36	8-719-484-00	COIL (WITH CORE)		D47	1-459-406-00	COIL (WITH CORE)	32UH
D37	8-719-484-00	COIL (WITH CORE)		D48	1-459-406-00	COIL (WITH CORE)	32UH
D38	8-719-484-00	COIL (WITH CORE)		D49	1-459-406-00	COIL (WITH CORE)	32UH
<u>COIL</u>							
L1	1-459-484-00	COIL (WITH CORE)		L2	1-459-484-00	COIL (WITH CORE)	35UH
L2	1-459-484-00	COIL (WITH CORE)		L3	1-459-406-00	COIL (WITH CORE)	32UH
L3	1-459-406-00	COIL (WITH CORE)		L4	1-459-406-00	COIL (WITH CORE)	32UH

Les composants identifiés par une trame et une marque **▲** sont critiques pour la sécurité.  
Ne les remplacer que par une pièce portant le numéro spécifié.

The components identified by shading and mark **▲** are critical for safety.  
Replace only with part number specified.

**G** **GA**

Ref.No	Part No.	Description	Remark			Ref.No	Part No.	Description	Remark					
L5	1-459-406-00	COIL (WITH CORE)	32UH			T11	1-424-161-11	TRANSFORMER, POWER INSULATED						
L6	1-459-406-00	COIL (WITH CORE)	32UH			T12	1-424-163-11	TRANSFORMER, POWER REGULATION						
L7	1-459-406-00	COIL (WITH CORE)	32UH			*****								
L8	1-459-406-00	COIL (WITH CORE)	32UH			*1-627-365-11	GA BOARD		*****					
L9	1-459-406-00	COIL (WITH CORE)	32UH			*****								
L12	1-410-682-31	INDUCTOR	470UH			*****								
L13	1-410-682-31	INDUCTOR	470UH			*****								
<b>TRANSISTOR</b>														
Q1	8-729-321-59	TRANSISTOR	2SK1170			*****								
	4-391-547-01	IC HOLDER, (Q1)				C101	1-126-630-11	ELECT	82MF	20%	25V			
Q2	8-729-321-59	TRANSISTOR	2SK1170			C102	1-126-630-11	ELECT	82MF	20%	25V			
	4-391-547-01	IC HOLDER, (Q2)				C103	1-126-096-11	ELECT	10MF	20%	25V			
Q3	8-729-119-76	TRANSISTOR	2SA1175-HFE			C104	1-126-096-11	ELECT	10MF	20%	25V			
Q4	8-729-119-76	TRANSISTOR	2SA1175-HFE			C105	1-136-153-00	FILM	0.01MF	5%	50V			
Q5	8-729-140-96	TRANSISTOR	2SD774-34			C106	1-130-471-00	MYLAR	0.001MF	5%	50V			
Q6	8-729-140-96	TRANSISTOR	2SD774-34			C107	1-102-973-00	CERAMIC	100PF	5%	50V			
<b>RESISTOR</b>														
R3	1-216-353-00	METAL OXIDE	2.2	5%	1W	F	C108	1-102-965-00	CERAMIC	39PF	5%	50V		
R4	1-216-353-00	METAL OXIDE	2.2	5%	1W	F	C109	1-130-471-00	FILM	0.001MF	5%	50V		
R5	1-214-657-00	METAL	1	1%	1/4W		C110	1-136-163-00	FILM	0.068MF	5%	50V		
R6	1-214-657-00	METAL	1	1%	1/4W		C111	1-136-165-00	FILM	0.1MF	5%	50V		
R7	1-249-413-11	CARBON	470	5%	1/4W		<b>DIODE</b>							
R8	1-249-413-11	CARBON	470	5%	1/4W		D101	8-719-000-28	THYRISTOR CR02AM-8					
R9	1-249-393-11	CARBON	10	5%	1/4W		D102	8-719-911-19	DIODE 1SS19					
R10	1-249-393-11	CARBON	10	5%	1/4W		<b>IC</b>							
R11	1-249-411-11	CARBON	330	5%	1/4W		IC101	8-759-906-62	IC MB3759-SNY					
R12	1-249-411-11	CARBON	330	5%	1/4W		IC102	8-759-340-46	IC HD14046BP					
R13	1-217-241-00	WIREWOUND	0.22	10%	3W	F	<b>TRANSISTOR</b>							
R14	1-217-241-00	WIREWOUND	0.22	10%	3W	F	Q101	8-729-119-76	TRANSISTOR 2SA1175-HFE					
R15	1-207-645-00	WIREWOUND	0.47	10%	3W	F	Q102	8-729-119-76	TRANSISTOR 2SA1175-HFE					
R16	1-207-645-00	WIREWOUND	0.47	10%	3W	F	Q103	8-729-266-83	TRANSISTOR 2SC2668					
R18	1-217-418-00	FUSIBLE	0.47	10%	1/2W	F	Q104	8-729-266-83	TRANSISTOR 2SC2668					
R19	1-249-382-11	CARBON	1.2	5%	1/4W	F	<b>RESISTOR</b>							
R20	1-215-440-00	METAL	6.2K	1%	1/6W		R101	1-249-421-11	CARBON	2.2K	5%	1/4W		
R21	1-215-465-00	METAL	68K	1%	1/6W		R102	1-249-421-11	CARBON	2.2K	5%	1/4W		
R22	1-215-453-00	METAL	22K	1%	1/6W		R103	1-249-427-11	CARBON	6.8K	5%	1/4W		
R23	1-215-455-00	METAL	27K	1%	1/6W		R105	1-215-447-00	METAL	12K	1%	1/6W		
R24	1-214-903-00	METAL	39K	1%	1/2W		R106	1-215-421-00	METAL	1K	1%	1/6W		
R25	1-214-902-00	METAL	36K	1%	1/2W		R107	1-249-437-11	CARBON	47K	5%	1/4W		
R26	1-215-460-00	METAL	43K	1%	1/6W		R108	1-215-437-00	METAL	4.7K	1%	1/6W		
R27	1-215-464-00	METAL	62K	1%	1/6W		R109	1-215-433-00	METAL	3.3K	1%	1/6W		
R28	1-214-894-00	METAL	18K	1%	1/2W		R110	1-215-441-00	METAL	6.8K	1%	1/6W		
R29	1-214-894-00	METAL	18K	1%	1/2W		R111	1-249-417-11	CARBON	1K	5%	1/4W		
R30	▲	METAL			1/6W		<b>VARIABLE RESISTOR</b>							
R31	▲	METAL			1/6W		R112	1-249-431-11	CARBON	15K	5%	1/4W		
R32	1-215-475-00	METAL	180K	1%	1/6W		R114	1-249-421-11	CARBON	2.2K	5%	1/4W		
R33	1-215-469-00	METAL	100K	1%	1/6W		R115	1-249-417-11	CARBON	1K	5%	1/4W		
R43	1-249-440-11	CARBON	82K	5%	1/4W		R116	1-249-417-11	CARBON	1K	5%	1/4W		
R44	1-249-421-11	CARBON	2.2K	5%	1/4W		R117	1-249-425-11	CARBON	4.7K	5%	1/4W		
R52	1-249-394-11	CARBON	12	5%	1/4W		R118	1-249-425-11	CARBON	4.7K	5%	1/4W		
R53	1-249-394-11	CARBON	12	5%	1/4W		R119	1-249-425-11	CARBON	4.7K	5%	1/4W		
<b>TRANSFORMER</b>														
T1	1-424-158-11	TRANSFORMER, CONVERTER DRIVE					R120	1-215-449-00	METAL	15K	1%	1/6W		
T2	1-424-158-11	TRANSFORMER, CONVERTER DRIVE					R121	1-215-439-00	METAL	5.6K	1%	1/6W		
T3	1-424-162-11	TRANSFORMER, CONVERTER POWER INSULATED					R122	1-249-441-11	CARBON	100K	5%	1/4W		
T4	1-424-164-11	TRANSFORMER, POWER REGULATION					*****							
T5	1-424-157-11	TRANSFORMER, HEATER					*****							
T6	1-424-159-11	TRANSFORMER, POWER OUTPUT					*****							
T7	1-424-160-11	TRANSFORMER, POWER REGULATION					*****							
T8	1-424-161-11	TRANSFORMER, POWER INSULATED					*****							
T9	1-424-165-11	TRANSFORMER, POWER REGULATION					*****							
T10	1-424-156-11	TRANSFORMER, POWER OUTPUT					*****							

- The components identified by **█** in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

**DDM-2801C/2802C  
DDM-2801C2/2802C2**

**GB    GC    HVK**

Les composants identifiés par une trame et une marque **A** sont critiques pour la sécurité.  
Ne les remplacer que par une pièce portant le numéro spécifié.

The components identified by shading and mark **A** are critical for safety.  
Replace only with part number specified.

Ref.No	Part No.	Description	Remark
* 1-627-366-11	GB BOARD	*****	

\* 1-564-348-00 PLUG (L TYPE) 5P  
\* 1-564-581-11 PLUG (L TYPE) 6P

CAPACITOR

C201	1-126-247-11	ELECT	560MF	20%	6.3V
C202	1-126-247-11	ELECT	560MF	20%	6.3V

DIODE

D201	8-719-110-16	DIODE	RD10ESB1		
------	--------------	-------	----------	--	--

IC

IC201	8-759-914-44	IC	TL431CLPB		
IC202	8-759-914-44	IC	TL431CLPB		
IC203	8-759-133-90	IC	UPC339C		
IC204	8-759-914-44	IC	TL431CLPB		

TRANSISTOR

Q201	8-729-180-93	TRANSISTOR	2SD809-F		
Q202	8-729-180-93	TRANSISTOR	2SD809-F		
Q203	8-729-140-96	TRANSISTOR	2SD774-34		
Q204	8-729-119-78	TRANSISTOR	2SC2785-HFE		
Q205	8-729-119-78	TRANSISTOR	2SC2785-HFE		

Q206	8-729-140-96	TRANSISTOR	2SD774-34		
------	--------------	------------	-----------	--	--

RESISTOR

R201	1-249-417-11	CARBON	1K	5%	1/4W
R202	1-249-417-11	CARBON	1K	5%	1/4W
R203	1-249-417-11	CARBON	1K	5%	1/4W
R204	1-249-417-11	CARBON	1K	5%	1/4W
R205	1-249-428-11	CARBON	8.2K	5%	1/4W

R206	1-249-431-11	CARBON	15K	5%	1/4W
R207	1-215-423-00	METAL	1.2K	1%	1/6W
R208	1-215-423-00	METAL	1.2K	1%	1/6W
R209	1-215-450-00	METAL	16K	1%	1/6W
R210	1-215-431-00	METAL	2.7K	1%	1/6W

R211	1-215-431-00	METAL	2.7K	1%	1/6W
R212	1-215-433-00	METAL	3.3K	1%	1/6W
R213	1-249-429-11	CARBON	10K	5%	1/4W
R214	1-249-429-11	CARBON	10K	5%	1/4W
R215	1-249-423-11	CARBON	3.3K	5%	1/4W

R216	1-249-429-11	CARBON	10K	5%	1/4W
------	--------------	--------	-----	----	------

VARIABLE RESISTOR

RV201	1-237-497-21	RES, ADJ, CERMET 100			
RV202	1-237-497-21	RES, ADJ, CERMET 100			

Ref.No	Part No.	Description	Remark
--------	----------	-------------	--------

IC

IC301	8-759-914-44	IC	TL431CLPB		
IC302	8-759-914-44	IC	TL431CLPB		
IC303	8-759-133-90	IC	UPC339C		

TRANSISTOR

Q301	8-729-180-93	TRANSISTOR	2SD809-F		
Q302	8-729-180-93	TRANSISTOR	2SD809-F		
Q303	8-729-119-78	TRANSISTOR	2SC2785-HFE		
Q304	8-729-140-96	TRANSISTOR	2SD774-34		
Q305	8-729-119-78	TRANSISTOR	2SC2785-HFE		

Q306	8-729-140-96	TRANSISTOR	2SD774-34		
------	--------------	------------	-----------	--	--

RESISTOR

R301	1-249-417-11	CARBON	1K	5%	1/4W
R302	1-249-417-11	CARBON	1K	5%	1/4W
R303	1-249-417-11	CARBON	1K	5%	1/4W
R304	1-249-417-11	CARBON	1K	5%	1/4W
R305	1-249-428-11	CARBON	8.2K	5%	1/4W
R306	1-215-423-00	METAL	1.2K	1%	1/6W
R307	1-215-423-00	METAL	1.2K	1%	1/6W
R308	1-215-433-00	METAL	3.3K	1%	1/6W
R309	1-215-433-00	METAL	3.3K	1%	1/6W
R310	1-215-435-00	METAL	3.9K	1%	1/6W
R311	1-249-428-11	CARBON	8.2K	5%	1/4W
R312	A.	METAL			1/6W
R313	A.	METAL			1/6W

VARIABLE RESISTOR

RV302	1-237-497-21	RES, ADJ, CERMET 100			
-------	--------------	----------------------	--	--	--

\*\*\*\*\*

K BOARD, COMPLETE

\*\*\*\*\*

4-391-550-01	SCREW (M5X15) (A), LOCK			
* 4-341-751-01	EYELET (EY4-EY9)			
* 4-341-752-01	EYELET (EY1-EY3)			

CAPACITOR

C1	1-136-103-00	FILM	0.1MF	5%	200V
C2	1-130-336-51	FILM	0.0068MF	5%	630V
C3	1-162-115-00	CERAMIC	330PF	10%	2KV
C4	1-136-105-00	FILM	0.33MF	5%	200V
C5	1-136-105-00	FILM	0.33MF	5%	200V

C6	A. 1-236-285-11	CR BLOCK, HIGH-VOLTAGE (HB-330)			
C7	1-162-116-00	CERAMIC	680PF	10%	2KV
C8	1-162-116-00	CERAMIC	680PF	10%	2KV
C9	1-124-126-00	ELECT	47MF	20%	25V
C10	1-129-898-00	FILM	0.0022MF	5%	630V

C11	1-130-336-51	FILM	0.0068MF	5%	630V
C12	1-123-267-00	ELECT	2.2MF	20%	160V

PLUG

CNK-1 * 1-508-767-00	PIN, CONNECTOR (5MM PITCH) 5P			
CNK-2 * 1-564-510-11	PLUG CONNECTOR 7P			
CNK-5 * 1-508-784-00	PIN, CONNECTOR (5MM PITCH) 1P			

DIODE

D1	8-719-901-19	DIODE V11N			
D2	8-719-971-20	DIODE ERC38-06			
D3	8-719-901-19	DIODE V11N			

C301	1-126-247-11	ELECT	560MF	20%	6.3V
C302	1-126-247-11	ELECT	560MF	20%	6.3V

DIODE

D301	8-719-110-16	DIODE	RD10ESB1		
D302	8-719-110-16	DIODE	RD10ESB1		

- The components identified by **[x]** in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation.

Should replacement be required, replace only with the value originally used.

**DDM-2801C/2802C  
DDM-2801C2/2802C2**

**HVK U**

Les composants identifiés par une trame et par une marque  $\Delta$  sont d'une importance critique pour la sécurité. Ne les remplacer que par des pièces de numéro spécifié.

The components identified by shading and mark  $\Delta$  are critical for safety.  
Replace only with part number specified.

Ref.No	Part No.	Description	Remark				
<u>COIL</u>							
L1	1-421-370-00	CHOKE COIL		12UH			
L2	1-410-068-11	INDUCTOR		5.6MMH			
L3	1-421-370-00	CHOKE COIL		12UH			
L4	1-410-068-11	INDUCTOR		5.6MMH			
<u>TRANSISTOR</u>							
Q1	8-729-927-31	TRANSISTOR IRF520					
	4-875-726-00	SHEET, INSULATING, (Q1)					
Q2	4-382-854-11	SCREW, (M3X10) P, SW (+), (Q1)					
Q3	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q3	8-729-119-76	TRANSISTOR 2SA1175-HFE					
<u>RESISTOR</u>							
R1	1-215-933-11	METAL OXIDE	33	5%	5W	F	
R2	1-215-933-11	METAL OXIDE	33	5%	5W	F	
R3	1-214-925-00	METAL	330K	1%	1/2W		
R4	1-249-441-11	CARBON	100K	5%	1/4W		
R5	1-202-824-00	SORID	3.3K	10%	1/2W		
R6	1-249-441-11	CARBON	100K	5%	1/4W		
R7	1-249-441-11	CARBON	100K	5%	1/4W		
R8	1-249-441-11	CARBON	100K	5%	1/4W		
R9	1-249-441-11	CARBON	100K	5%	1/4W		
R10	1-249-441-11	CARBON	100K	5%	1/4W		
R11	1-249-405-11	CARBON	100	5%	1/4W		
R12	1-249-421-11	CARBON	2.2K	5%	1/4W		
R13	1-249-411-11	CARBON	330	5%	1/4W		
R14	1-213-048-00	FUSIBLE	3.3	5%	1W	F	
R15	1-202-824-00	SORID	3.3K	10%	1/2W		
R16	1-202-824-00	SORID	3.3K	10%	1/2W		
<u>SPARK GAP</u>							
SG1	1-519-063-XX	DISCHARGING GAP					
SG2	1-519-063-XX	DISCHARGING GAP					
<u>TRANSFORMER</u>							
T1	$\Delta$ 1-439-442-11	TRANSFORMER ASSY, FLYBACK					
T2	$\Delta$ 1-439-445-11	TRANSFORMER ASSY, FLYBACK					
T3	$\Delta$ 1-439-440-11	TRANSFORMER ASSY, FLYBACK					

Ref.No	Part No.	Description	Remark
<u>COIL</u>			
FL7	1-236-071-11	ENCAPSULATED COMPONENT	
FL8	1-236-071-11	ENCAPSULATED COMPONENT	
FL9	1-236-071-11	ENCAPSULATED COMPONENT	
FL11	1-236-129-11	ENCAPSULATED COMPONENT	
FL12	1-236-129-11	ENCAPSULATED COMPONENT	
FL13	1-236-129-11	ENCAPSULATED COMPONENT	
FL14	1-236-129-11	ENCAPSULATED COMPONENT	
FL15	1-236-129-11	ENCAPSULATED COMPONENT	
FL16	1-236-129-11	ENCAPSULATED COMPONENT	
<u>TRANSISTOR</u>			
IC201	8-759-929-62	IC LM7812CT	
	4-381-906-01	SPRING (F), (IC201)	
	4-391-519-01	SHEET (E) INSULATOR, (IC201)	
IC202	8-759-929-65	IC LM7912CT	
	4-381-906-01	SPRING (F), (IC202)	
	4-391-515-01	SHEET (E) INSULATOR, (IC202)	
<u>RESISTOR</u>			
*****			
<u>IC</u>			
*****			
<u>MISCELLANEOUS</u>			
*****			
$\Delta$ .1-238-341-11	RESISTOR ASSY, HIGH VOLTAGE		
.1-426-389-11	COIL, LANDING CORRECTION		
$\Delta$ .1-453-111-12	DTC BLOCK HIGH VOLTAGE		
$\Delta$ .1-540-066-11	INLET, AC (3 P)		
$\Delta$ .1-571-688-11	SWITCH, SEESAW (AC POWER)		
$\Delta$ .1-541-449-21	FAN, DC (WITH SENSOR)		
*1-555-110-00	CABLE, PIN		
*1-562-576-11	ADAPTOR, CONVERSION BNC		
*1-574-162-11	CABLE, CONNECTION		
*1-574-163-11	CABLE, CONNECTION		
*1-574-164-11	CABLE, CONNECTION		
*1-574-165-11	CABLE, CONNECTION		
*1-574-166-11	CABLE, CONNECTION		
*1-574-167-11	CABLE, CONNECTION		
L901 $\Delta$ .1-426-390-11	COIL, DEMAGNETIZATION		
V901 $\Delta$ *8-735-021-71	PICTURE TUBE (32SF-A1)		
*****			
<u>ACCESSORIES &amp; PACKING MATERIALS</u>			
*****			
* X-4391-527-1	PLATE ASSY, BOTTOM (DDM-2801C/2801C2 only)		
X-4391-545-1	BOARD, ASSY, BOTTOM (DDM-2801C/2802C2 only)		
$\Delta$ 1-551-812-11	CORD, POWER		
3-786-534-01	MANUAL, INSTRUCTION		
* 4-029-197-01	BAG, PROTECTION		
* 4-394-557-01	CUSHION (FRONT) (DDM-2801C/2802C2 only)		
4-394-559-03	CUSHION (UPPER) (DDM-2802C/2802C2 only)		
* 4-391-563-01	LID (DDM-2801C/2802C2 only)		
* 4-391-564-01	FRAME (DDM-2801C/2801C2 only)		
* 4-391-566-01	CUSHION (UPPER) (DDM-2801C/2801C2 only)		
* 4-391-572-01	BAND		
4-394-586-01	LID (DDM-2802C/2802C2 only)		
* 4-603-966-01	STOPPER (LARGE). SPEED		

<u>U BOARD, COMPLETE</u>							
*****							
DDM-2801C; Serial No. 2,000,044 and higher							
DDM-2802C; Serial No. 2,000,021 and higher							
DDM-2801C2; Serial No. 2,000,050 and higher							
DDM-2802C2; Serial No. 2,000,013 and higher							
<u>CAPACITOR</u>							
*****							
C201	1-135-152-21	TANTAL CHIP	1.5MF	10%	25V		
C202	1-135-152-21	TANTAL CHIP	1.5MF	10%	25V		
C203	1-135-152-21	TANTAL CHIP	1.5MF	10%	25V		
C204	1-135-152-21	TANTAL CHIP	1.5MF	10%	25V		
<u>PLUG</u>							
*****							
CNU-4*1-564-511-11	PLUG, CONNECTOR 8P						
CNU-5*1-564-505-11	PLUG, CONNECTOR 2P						
CNU-6*1-564-513-11	PLUG, CONNECTOR 10P						
<u>FILTER</u>							
*****							
FL2	1-236-071-11	ENCAPSULATED COMPONENT					
FL3	1-236-071-11	ENCAPSULATED COMPONENT					
FL4	1-236-071-11	ENCAPSULATED COMPONENT					
FL5	1-236-071-11	ENCAPSULATED COMPONENT					
FL6	1-236-071-11	ENCAPSULATED COMPONENT					

**DDM-2801C/2802C  
DDM-2801C2/2802C2**

9-964-217-02

**Sony Corporation  
Display Products Group**

—344—

English  
91CY0401-1  
Printed in Japan  
(C) 1991. 3